



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

December 30, 2009

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 14, Section 401 Water Quality Certification, and Neuse Riparian Buffer Authorization** for the extension of Timber Drive from NC 50 to White Oak Road (SR 2547) in Garner, Federal Aid Project Number STP-0508(2), Division 5, T.I.P No. U-4703.

Debit \$249.00 from WBS No. 35871.1.1

Dear Sir,

The North Carolina Department of Transportation (NCDOT) proposes to extend Timber Drive (SR 2812) from NC 50 eastward to White Oak Road (SR 2547), a distance of approximately 1.3 miles. Please see the enclosed copies of the Pre-Construction Notification (PCN), Stormwater Management Plan, permit drawings, compensatory mitigation debit, EEP Concurrence Letter, design plans for the above-referenced project and the minutes from the meeting on October 15, 2009.

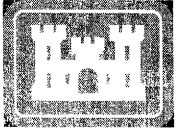
The Environmental Assessment (EA) was completed for this project in May 2006, the Finding of No Significant Impact (FONSI) was completed in December 2007, a Construction Consultation was completed in August of 2009. Additional copies are available upon request.

This project calls for a letting date of May 18, 2010 and a review date of April 6, 2010. However, the let date may advance as additional funds become available.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-431-2000
FAX: 919-431-2001
WEBSITE: WWW.NCDOT.ORG

LOCATION:
4701 Atlantic Ave.,
Suite 116
Raleigh, NC 27604



Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 14 or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes ☒ No
1d. Type(s) of approval sought from the DWQ (check all that apply): ☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☒ Riparian Buffer Authorization	
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No
	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☒ Yes ☐ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes ☒ No

2. Project Information

2a. Name of project:	Timber Drive East Extension (SR 2812) from NC 50 to White Oak Road
2b. County:	Wake
2c. Nearest municipality / town:	Garner
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	U-4703

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 431-1605
3g. Fax no.:	(919) 431-2002
3h. Email address:	seeasterly@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.6856 (DD.DDDDDD) Longitude: - 78.5965 (-DD.DDDDDD)
1c. Property size:	82 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Mahlers Creek
2b. Water Quality Classification of nearest receiving water:	C, NSW
2c. River basin:	Neuse
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Urban and Developed Land	
3b. List the total estimated acreage of all existing wetlands on the property: 0.72	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 257	
3d. Explain the purpose of the proposed project: The primary purposes of the proposed action are as follows: To provide additional roadway capacity to serve local traffic and to supplement the US 70 corridor with a parallel travel route, to provide improved access and service to existing, occurring, and planned development in the project area, and to provide for orderly economic development in the area.	
3e. Describe the overall project in detail, including the type of equipment to be used: The North Carolina Department of Transportation (NCDOT) proposes to extend Timber Drive (SR 2812) from NC 50 eastward to White Oak Road (SR 2547), a distance of approximately 1.3 miles. The proposed extension project will be a four-lane, median divided roadway with curbs and gutters, bicycle provisions, and sidewalks within a 150 to 200-foot wide right of way. New Rand Road (SR 2562) will be disconnected from Timber Drive East Extension and will be connected to NC 50 about 1100-feet north of Timber Drive. NC 50 is to be improved to three lanes from the proposed intersection with the New Rand Road connector southwest to the intersection with Timber Drive/Timber Drive East. A southbound travel lane is to be extended along the west side of White Oak Road from the intersection with Timber Drive East southward to the intersection with Hillandale Land. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☒ Yes ☐ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☒ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: RK&K Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. The initial verification was on December 10, 2004. The NC Department of Transportation does not request the Corps to evaluate our site using the Rapanos Guidance. Instead, I am satisfied with the delineation as reviewed and approved in the field by the Corps prior to 6/5/2007, and ask that you approve the delineation submitted to you based on that field review by your staff. Please note that on 2/13/2007 an area between NC 50 and New Rand Road that had originally been called jurisdictional was reviewed by the USACE and DWQ and determined to be ephemeral and not jurisdictional.	

5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

- ☒ Wetlands
 ☒ Streams - tributaries
 ☒ Buffers
☐ Open Waters
 ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☒ P ☒ T	Fill, Mechanized Clearing	Riverine	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.21 (P) 0.11 (T)
Site 2 ☒ P ☐ T	Mechanized Clearing	Riverine	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01 (P)
Site 3 ☒ P ☐ T	Fill	Riverine	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.12 (P)
Site 4 ☒ P ☐ T	Mechanized Clearing	Riverine	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.02 (P)
Site 1 ☐ P ☐ T Utility Impacts			☐ Yes ☐ No	☐ Corps ☐ DWQ	
2g. Total wetland impacts					0.35 Permanent 0.11 Temporary

2h. Comments: As agreed upon in an email dated November 18, 2009 from the USACE, NCDOT commit to maximizing use of timber mats where practicable, and only using temporary fill where it is necessary because of the terrain or other factors.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☐ P ☐ T	NA	NA	☐ PER ☐ INT	☐ Corps ☐ DWQ	NA	NA
Site 2 ☒ P ☒ T	Fill	UT to Swift Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	6	62 (P) 13 (T)
Site 3 ☒ P ☒ T	Fill, Channel Relocation	UT to Mahlers Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	160 (P) 22 (T)
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
3h. Total stream and tributary impacts						222 Perm 35 Temp

3i. Comments:

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number -- Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavat ed	Flooded	Filled	Excavated	Flooded
P1								
P2								
5f. Total								

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☒ Neuse ☐ Catawba			☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)		
B1 ☒ P ☐ T	Bridge and Energy Dissipater	Mahlers Creek	☐ Yes ☒ No	7,875	5,399		
B2 ☒ P ☐ T	Road Crossing	UT to Swift Creek	☐ Yes ☒ No	3,921	1,512		
B3 ☒ P ☐ T	Road Impacts other than Road Crossings	UT to Mahlers Creek	☒ Yes ☐ No	10,601	6,002		
6h. Total buffer impacts				22,397	12,913		
6i. Comments:							

D. Impact Justification and Mitigation**1. Avoidance and Minimization**

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

Initially NCDOT proposed to place two culverts at the Mahlers Creek Crossing. One culvert was going to be installed to handle the hydraulic flow of Mahlers Creek and the other culvert was going to accommodate the proposed greenway for the City of Garner. Upon further discussion it was determined that installing dual parallel bridges to span the Mahlers Creek crossing would significantly reduce the wetland and stream impacts. A work bridge will be used and hand clearing will be done in wetlands of Mahlers Creek. The selected alternative crosses wetlands of Mahlers Creek at the narrowest point. The selected alternative also bridges Mahlers Creek, most of the projects wetlands and the proposed Town of Garner Greenway. There will be no deck drains in Zone 1. A dry detention basin and energy dissipaters will also be used. See Stormwater Management Plan.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

2:1 slopes are to be used, and Best Management Practices for Surface Waters.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?

☒ Yes ☐ No

2b. If yes, mitigation is required by (check all that apply):

☒ DWQ ☒ Corps

2c. If yes, which mitigation option will be used for this project?

☐ Mitigation bank
☒ Payment to in-lieu fee program
☒ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)

Type

Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.

☒ Yes

4b. Stream mitigation requested:

0 linear feet

4c. If using stream mitigation, stream temperature:

☐ warm ☐ cool ☐ cold

4d. Buffer mitigation requested (DWQ only):

0 square feet

4e. Riparian wetland mitigation requested:

0.70 acres

4f. Non-riparian wetland mitigation requested:

0 acres

4g. Coastal (tidal) wetland mitigation requested:

0 acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

Compensatory Mitigation using Jeffery's Warehouse Mitigation Site. See Attached.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?

☒ Yes☐ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1	Road Impacts other than Road Crossings	5,508	3 (2 for Catawba)	16,524
Zone 2	Road Impacts other than Road Crossings	5,289	1.5	7,934
6f. Total buffer mitigation required:				24,458

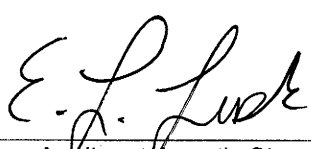
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

Jeffrey's Warehouse Mitigation Site Debit. See attached.

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☒ Yes ☐ No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See permit drawings (in Stormwater Management Plan)	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☐ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes ☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes ☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ Yes ☐ No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes ☒ No
2b. Is this an after-the-fact permit application?	☐ Yes ☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this project, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
4. Sewage Disposal (DWQ Requirement)	
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP, USFWS website, NCDOT field surveys on May 29, 2009. Mussel survey conducted in April 2005 and November 2006. No effect for both surveys.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	12.30.09 Date



December 30, 2009

Mr. Eric Alsmeyer
U. S. Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

Dear Mr. Alsmeyer:

Subject: EEP Mitigation Acceptance Letter:

U-4703, Timber Drive East Extension from NC 50 to White Oak Road, Wake County; Neuse River Basin (Cataloging Unit 03020201); Central Piedmont (CP) Eco-Region

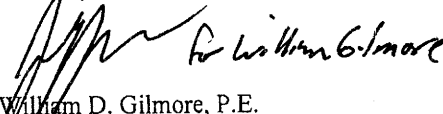
The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the unavoidable impact associated with the above referenced project. Based on the information supplied by the NCDOT on December 23, 2009, the impacts are located in CU 03020201 of the Neuse River Basin in the Central Piedmont (CP) Eco-Region, and the anticipated mitigation credits needed to offset the impacts are as follows:

Neuse 03020201 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0.35	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	0	0.70	0	0	0	0

This mitigation acceptance letter replaces the mitigation acceptance letter issued on September 25, 2009. Mitigation associated with this project will be provided in accordance with Section X of Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient compensatory riparian wetland mitigation in the appropriate cataloging unit in the amount listed in the above table to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,


William D. Gilmore, P.E.
EEP Director

cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: U-4703 Revised

Restoring... Enhancing... Protecting Our State





December 30, 2009

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

U-4703, Timber Drive East Extension from NC 50 to White Oak Road, Wake County

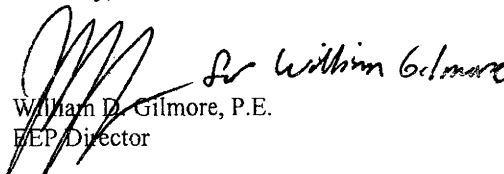
The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the subject project. Based on the information supplied by you on December 23, 2009, the impacts are located in CU 03020201 of the Wake River Basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Neuse 03020201 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non- Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0.35	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	0	0.70	0	0	0	0

This mitigation acceptance letter replaces the mitigation acceptance letter issued on September 25, 2009. EEP commits to implementing sufficient compensatory riparian wetland mitigation credits to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,


William D. Gilmore, P.E.
EEP Director

cc: Mr. Eric Alsmeyer, USACE – Raleigh Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: U-4703 Revised

Restoring... Enhancing... Protecting Our State



STORMWATER MANAGEMENT PLAN:

TIP project U-4703 is a roadway construction project in Wake County, North Carolina. The mainline roadway (SR 2812 Timber Drive East) is a four lane curb and gutter roadway with grass medians and sidewalks on new location. The length of the mainline roadway is 1.404 miles. The mainline roadway will utilize a closed storm drainage system to drain the roadway right-of-way. The project also includes modifications to and widening SR 2547 (White Oak Road), NC 50 and SR 2562 (New Rand Road). A new connector between SR 2562 (New Rand Road) and NC 50 will also be constructed as part of the project.

The project includes several important features to help reduce adverse impacts from stormwater discharges. These features include the following items:

Bridge over Mahlers Creek – A reinforced concrete box culvert is all that is required to provide adequate hydraulic capacity for the stream crossing at Mahlers Creek. However, in an attempt to minimize impacts to existing wetlands and surface waters a 368' long bridge (4 spans at 92' each) is proposed at the Mahlers Creek crossing. The proposed bridge structure will include deck drains over the existing wetlands and Zone 2 of the Neuse River Basin Buffers. Deck drains are not proposed over Zone 1 of the stream buffer.

Dry Detention Basins at Mahlers Creek – two extended dry detention basins are proposed at the Mahlers Creek stream crossing. The basins will receive all discharge from the proposed roadway storm drainage systems at Mahlers Creek and provide stormwater treatment prior to its discharge from the storm drainage system. The basins were designed in accordance with the guidelines presented in the North Carolina Department of Transportation Stormwater Best Management Toolbox. The basins are designed to capture the runoff from the first one inch of rainfall in a water quality pool and draw that volume down slowly over a three to five day period. Discharges from larger storm events are designed to safely pass through the dry detention pond. Outflow from each of the basins is directed to an energy dissipater device to reduce outlet velocities from the outlet pipe to a non-erosive velocity.

Vegetated Roadside Ditches – Most of the proposed project uses a curb and gutter typical section with associated storm drainage piping. However, where possible vegetated roadside ditches have been used to convey stormwater through the right-of-way. These features are primarily used to collect off-site stormwater flows and convey them to cross pipes where they cross the proposed roadway and do not mix with proposed roadway storm drainage.

Compensatory Mitigation

The Jeffreys Warehouse Mitigation Site was originally constructed as on-site mitigation for R-1030 US 117 from south of NC 581 in Goldsboro to the US 264 Bypass in Wilson. There are two parcels associated with this mitigation site. The west parcel (approximately 50.2 acres) is bounded on the northwest by the Little River and on the southeast by the US 117 right-of-way. The east parcel (approximately 37.5 acres) is bounded on the northwest by the US 117 right-of-way, on the northeast by a Wayne County Board of Education school bus maintenance shop, and on the east and southeast by private property. The site was constructed in 2006 and has undergone three year of hydrologic and vegetative monitoring.

To offset unavoidable stream impacts associated with T.I.P. U-4703, the Jeffereys Warehouse Mitigation site will be debited 222 L.F. of stream restoration. To offset unavoidable Neuse Buffer impacts associated with T.I.P U-4703, the Jeffreys Warehouse Mitigation Site will be debited 24,458 S.F of Neuse Buffer restoration. These debits are reflected in the debit ledger below.

Site name	Site TIP	HUC	River Basin	Division	County
Jefferey's Warehouse (JALO)	R-1030AA	3020201	Neuse	4	Wayne

Mitigation Type	As Built Quantity	Available	Debit	Debit
			B-3528	B-4300
Stream Restoration	3,731	2,971	452(226@2:1)	
Riverine Wetland Restoration	3.66	0.12		
Non-Riverine Wetland Restoration	23.02	18.49		
Riverine Wetland Preservation	12.36	8.61		
Neuse Buffer Restoration	689,607	311,501	75,577	40,075

Debit	Debit	Debit	Debit	Debit	Debit	Debit
R-2719A	B-4592	B-4304	U-3344A	U-4011	R-2814A	U-4703
			25	61		222
		0.92			2.62	
2.76					1.77	
					3.75(5:1ratio)	
172,387	16,398	3,653	45,558			24,458

Meeting minutes for U-4703, Wake Co., Timber Drive 10/15/2009

Attendees

Marshall Clawson-Hydraulics

Sara Easterly-NEU

Chris Murray-DEO Div 5

Rob Ridings-DWQ

Eric Alsmeyer-ACOE

Deanna Riffey-NEU

Sheet 5 and 5A

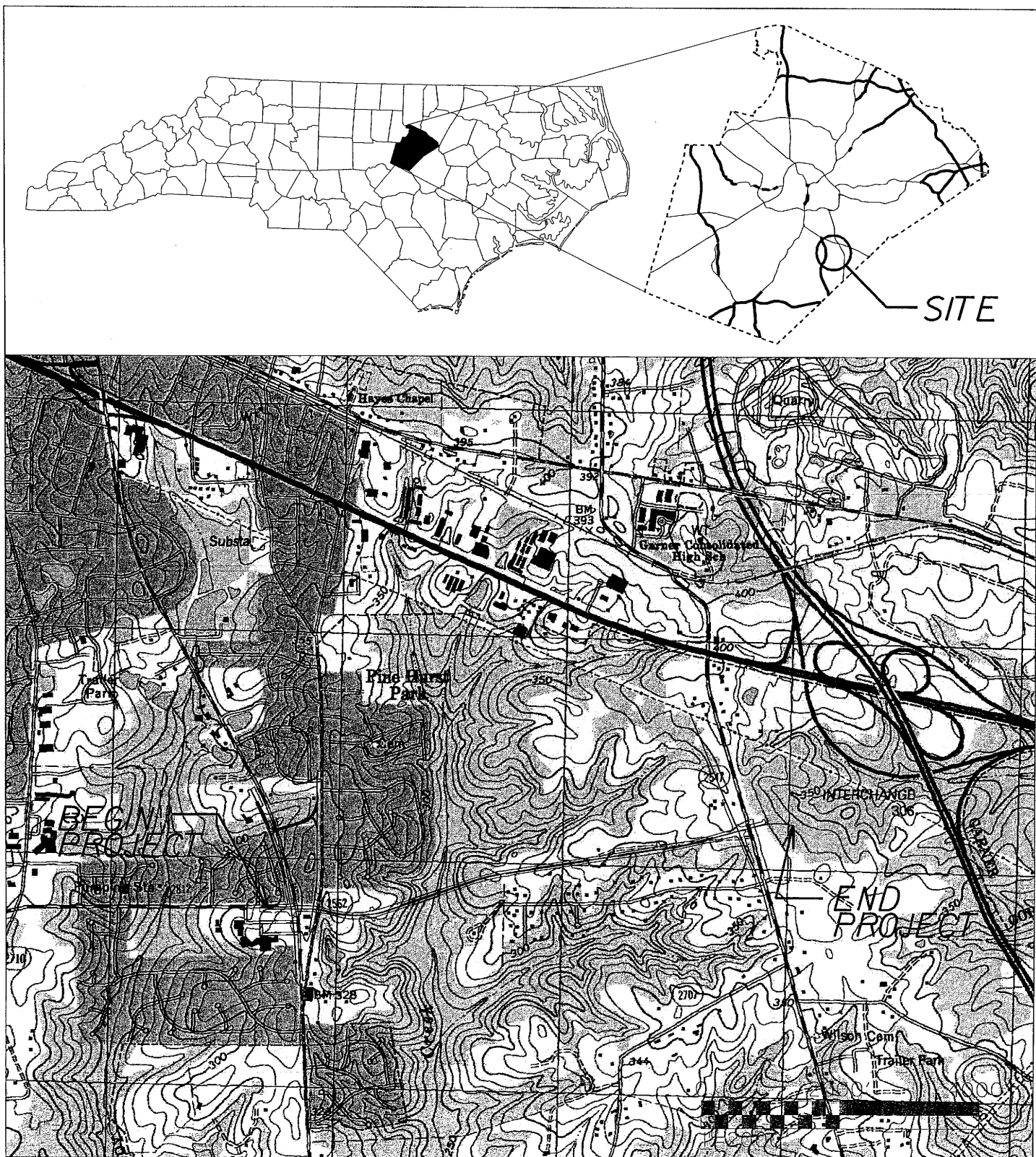
Rob said he liked the design to use a basin and then discharge to the wetlands but that DWQ would come to DOT if there were any maintenance issues with the basin even though it was on private property.

Chris Murray said he would discuss this with the Division.

Eric said DOT need to provide justification as to why the HQ wetlands could not be built from a bridge instead of a causeway or work pad.

Sheet 10

No comments



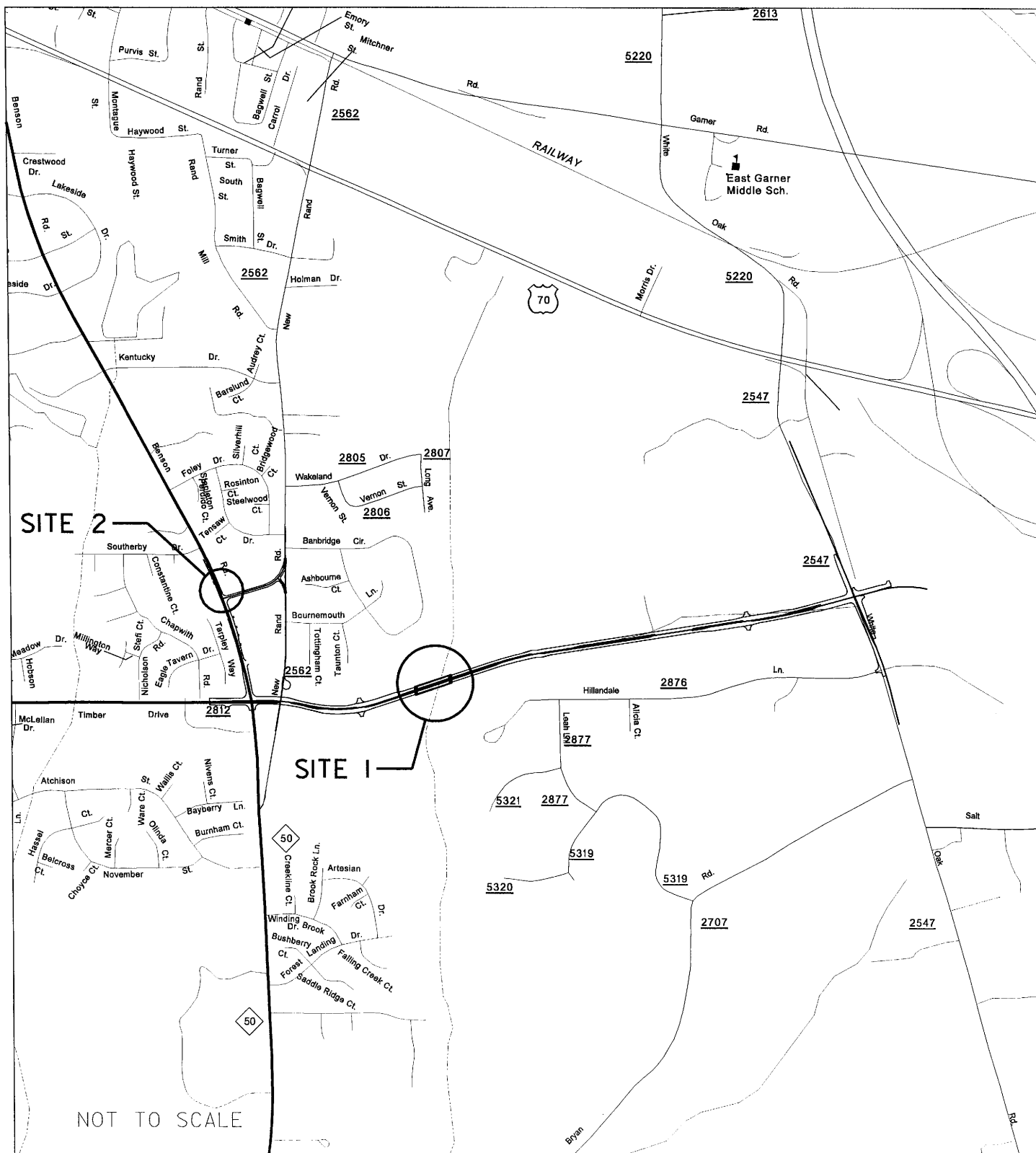
STREAM AND WETLAND VICINITY MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 35871.1.1 (U4703)

TIMBER DR. EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547)

Permit Drawing
Sheet 1 of 19



STREAM AND WETLAND LOCATION MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 35871.1.1 (U4703)

TIMBER DR. EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547)

Permit Drawing
Sheet 2 of 19

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
3	First Union National Bank	First Union National Bank, c/o Cheryl Welch First Union Plaza, Cont-2, Charlotte, NC 28288
4	Bonnie G. Ray	420 Hillandale Lane, Garner NC 27529
11	Garner Church of Christ	118 Park Ave, Fuquay-Varina NC 27526
13	Ryan L. Creech	101 Tarpley Way, Garner NC 27529
14	Heidi K. Moore	103 Tarpley Way, Garner NC 27529
N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS WAKE COUNTY PROJECT: 35871.1.1 (U-4703) Permit Drawing Sheet 3 of 19 6/17/2009		

R:\Z-misc\Hydro\Weiprop.xls

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 30+88 to 34+83	368' BRIDGE	0.13 ¹	0.11		0.08	0.27					
2	-Y- 16+40 to 18+11 RT	42" RCP				0.00 ⁴		0.01	0.00 ³	62	13	
3	-L- 32+00 -L- LT	Fill/Channel Reloc	0.05		0.02	0.05		0.02	0.00 ²	160	22	
4	-L- 27+50 -L- RRT	Detention Basin				0.02						
TOTALS:			0.18	0.11	0.02	0.15	0.27	0.03	0.00	222	35	

1 INCLUDES 115.4 SF (0.003 Ac) IMPACT FROM BRIDGE PIERS AND 0.005 Ac DUE TO SS-RELOCATION

2 0.002 AC IMPACT

3 0.001 AC IMPACT

4 0.004 AC IMPACT

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Permit Drawing
Sheet 4 of

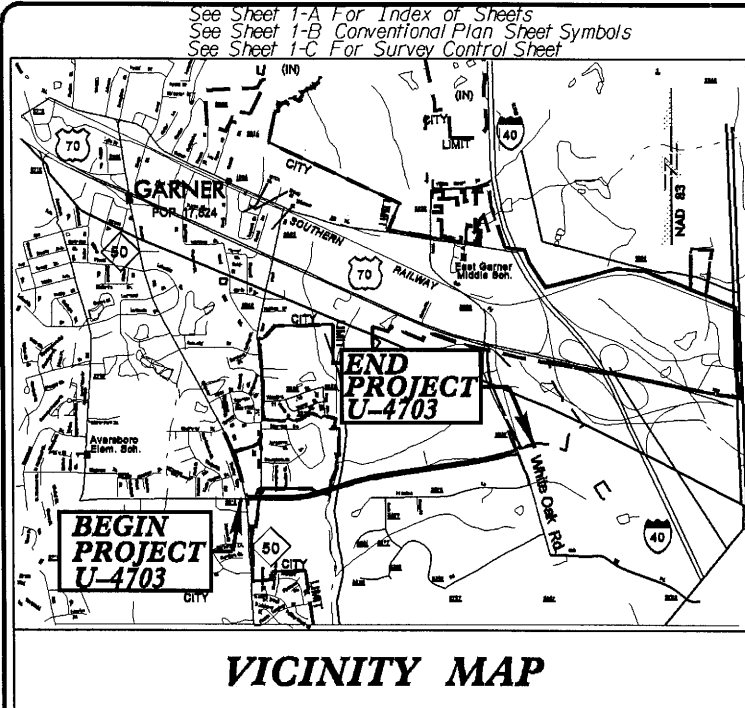
WAKE COUNTY
PROJECT: 35871.1.1 (U-4703)

ATN Revised 3/31/05

12/7/09

TIP PROJECT: U-4703

CONTRACT:



VICINITY MAP

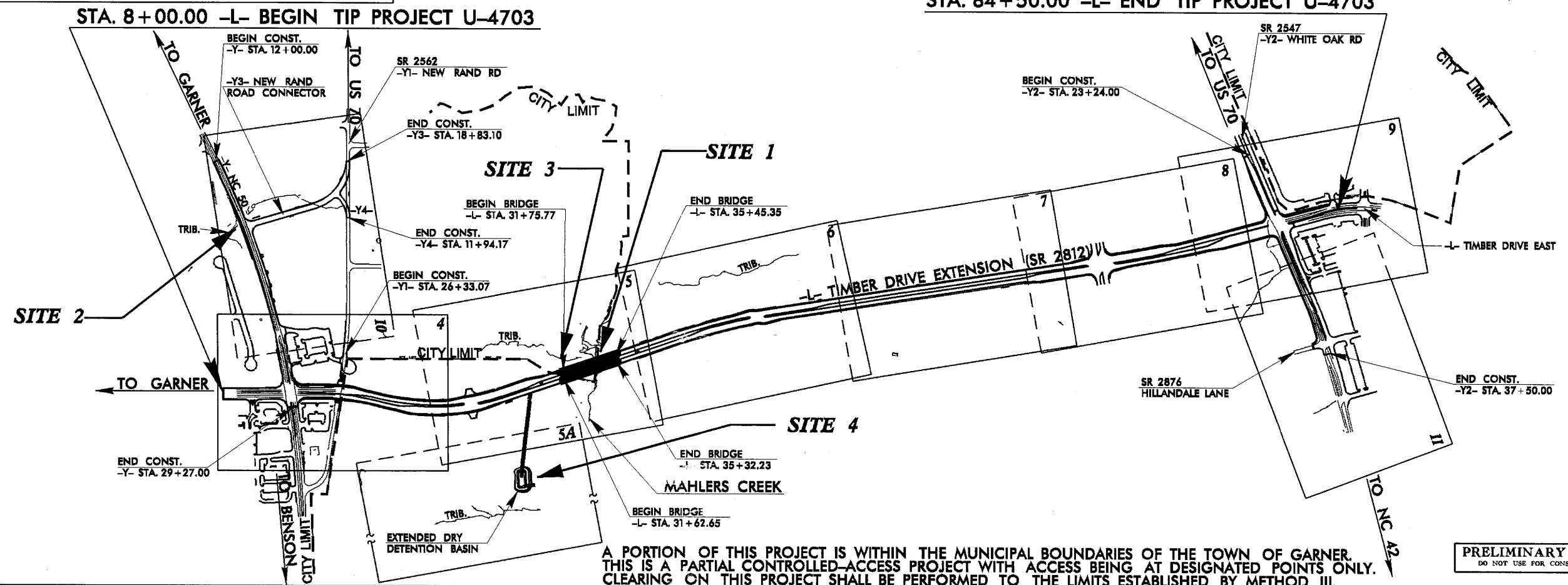
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: **TIMBER DRIVE EAST EXTENSION (SR 2812)**
FROM NC 50 TO WHITE OAK ROAD (SR 2547) IN GARNER

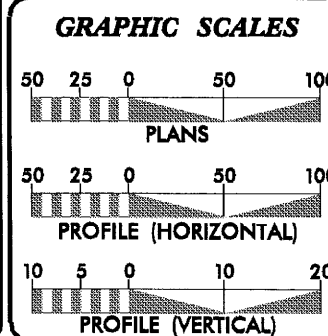
TYPE OF WORK: **STREAM AND WETLAND PERMIT DRAWINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4703	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
35871.1.1	STP-0508(2)	PE	
35871.2.1	STP-0508(2)	R/W & UTILITIES	
35871.3.1	STPDA-0508(3)	CONST.	
Permit Drawing			
Sheet <u>5</u> of <u>19</u>			



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF GARNER. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING AT DESIGNATED POINTS ONLY. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA	
ADT 2009 =	15,435
ADT 2030 =	24,000
DHV =	10 %
D =	55 %
T =	6 % *
V =	50 MPH
* TTST 2%	DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4703 = 1.379 mi.
LENGTH STRUCTURE OF TIP PROJECT U-4703 = 0.070 mi.
TOTAL LENGTH OF TIP PROJECT U-4703 = 1.449 mi.

Prepared in the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2004 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: AUGUST 20, 2008	JAMES A. SPEER, PE PROJECT ENGINEER
LETTING DATE: MAY 18, 2010	DANIEL W. GARDNER, JR., PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE: _____	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE: _____	P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE HIGHWAY DESIGN ENGINEER	

5/2/19

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PROJECT REFERENCE NO.
U-4703

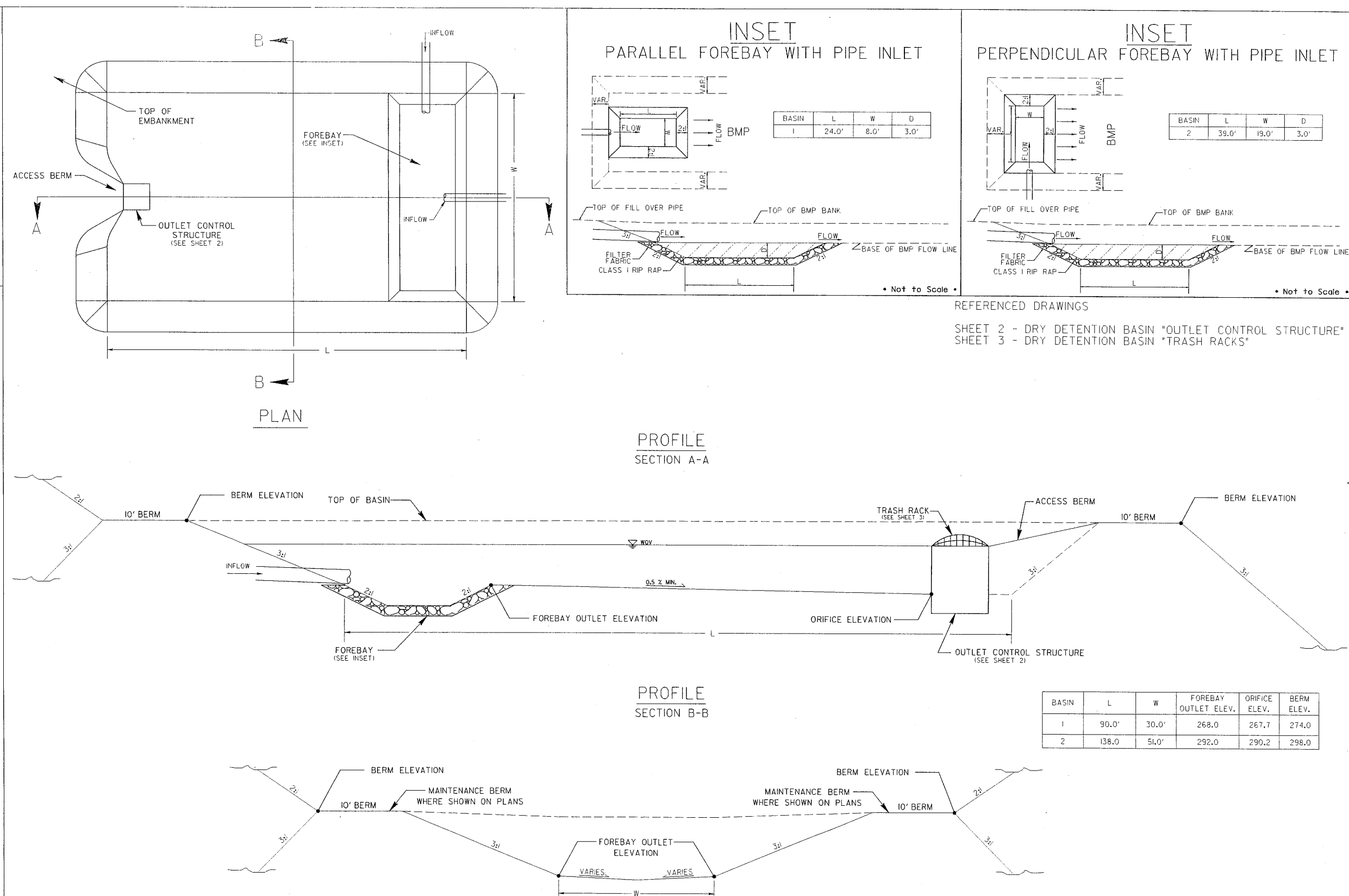
SHEET NO.
2-E

HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 6 of 19



DRY DETENTION BASIN
BASIN DETAILS

DRY DETENTION BASIN
BASIN DETAILS

BASIN	L	W	FOREBAY OUTLET ELEV.	ORIFICE ELEV.	BERM ELEV.
1	90.0'	30.0'	268.0	267.7	274.0
2	138.0	51.0'	292.0	290.2	298.0

NOT TO SCALE

6/2/90

06/17/09 07:06:47
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PROJECT REFERENCE NO.
U-4703

SHEET NO.
2-F

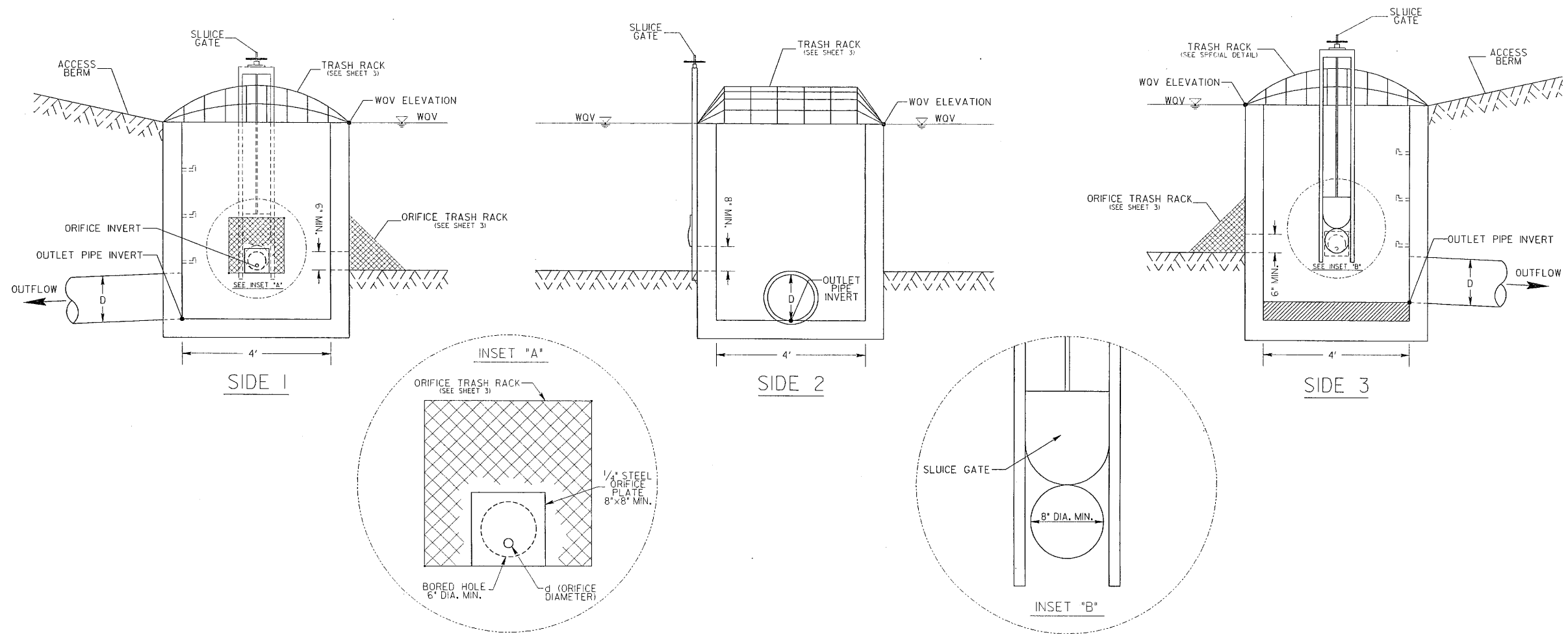
HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/CQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 19

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE



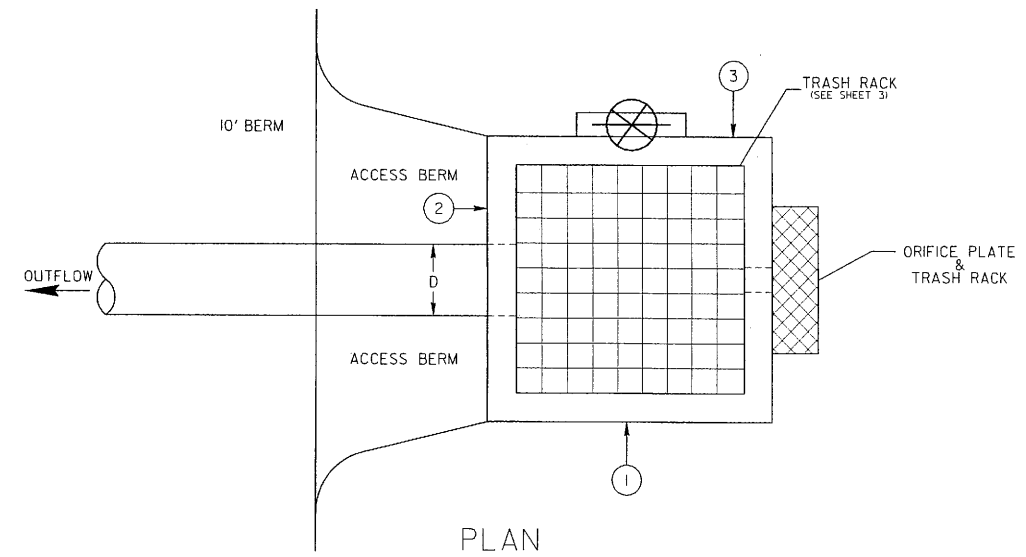
NOTES

1. 8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION.
2. FOR OUTLET STRUCTURE USE PRECAST DRAINAGE STRUCTURE STD. 840.45. PRECAST KNOCKOUT WALLS NOT ALLOWED. SOLID WALLS ONLY.

REFERENCED DRAWINGS

SHEET 1- DRY DETENTION BASIN "BASIN DETAILS"
SHEET 3 - DRY DETENTION BASIN "TRASH RACKS"

BASIN	-L- STATION	WQV ELEV.	ORIFICE INVERT	OUTLET PIPE INVERT	D (IN), OUTLET DIAMETER	d (IN), ORIFICE DIAMETER
1	27+00 RT	271.0	267.7	267.0	36"	1.25"
2	37+50 RT	295.0	290.2	289.0	36"	2.00"



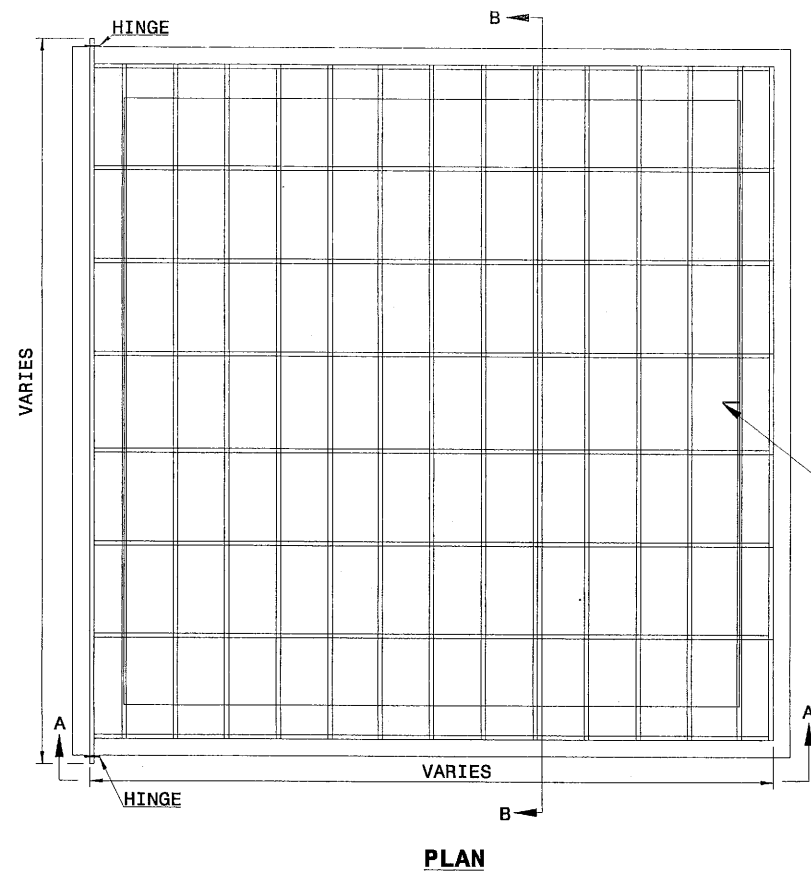
DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

NOT TO SCALE

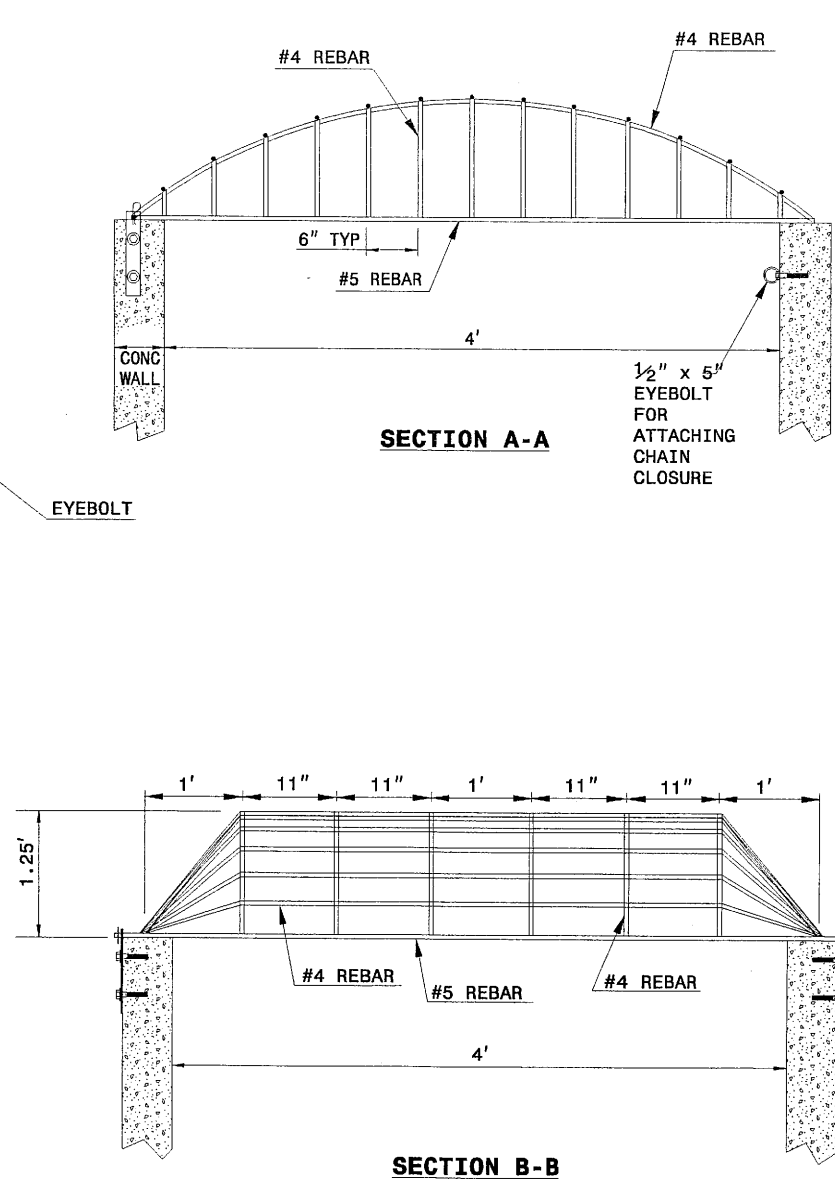
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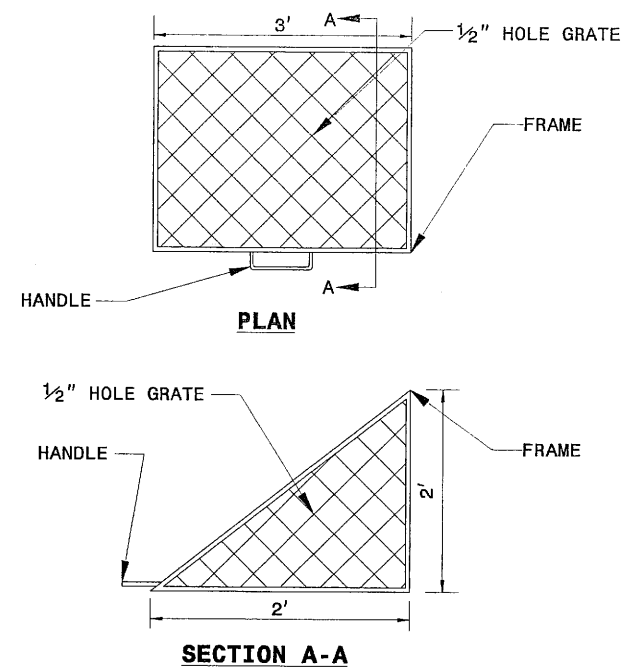
DRY DETENTION BASIN
TRASH RACKS



- RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
 3. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A153.



REBAR TRASH RACK



- ORIFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
 3. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A153.

REMOVABLE ORIFICE TRASH RACK

* NOT TO SCALE

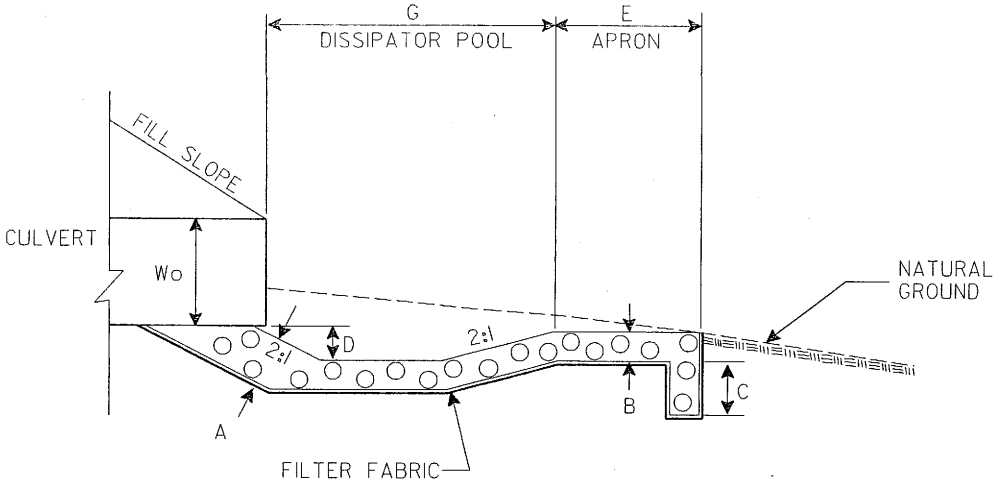
DRY DETENTION BASIN
TRASH RACKS

DIM.	RIP RAP BASIN #		
	1	2	3
A	2.0'	2.0'	2.0'
B	1.5'	1.5'	1.5'
C	2.0'	2.0'	0.0'
D	1.0'	1.0'	1.25'
E	4.5'	5.0'	6.5'
F	13.0'	13.0'	16.0'
G	9.5'	10.0'	12.5'

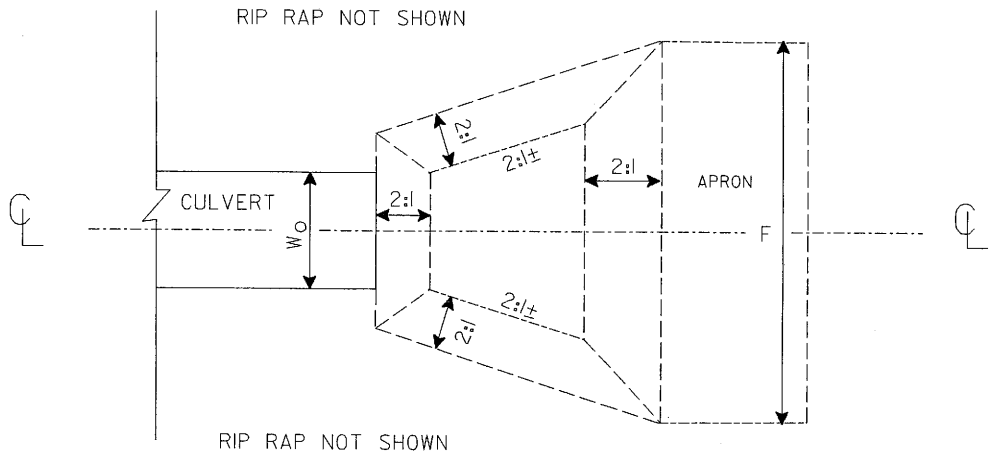
ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	S+a 27+37 -L- (R+)
2	S+a 34+59 -L- (R+)
3	S+a 16+67.50 -Y- (R+)

SECTION

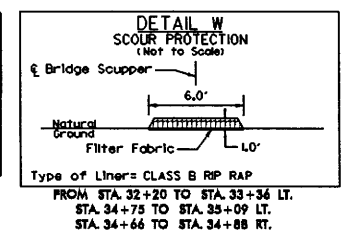
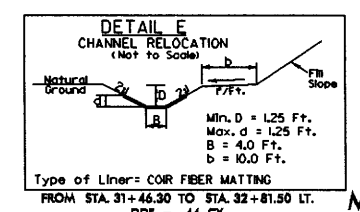
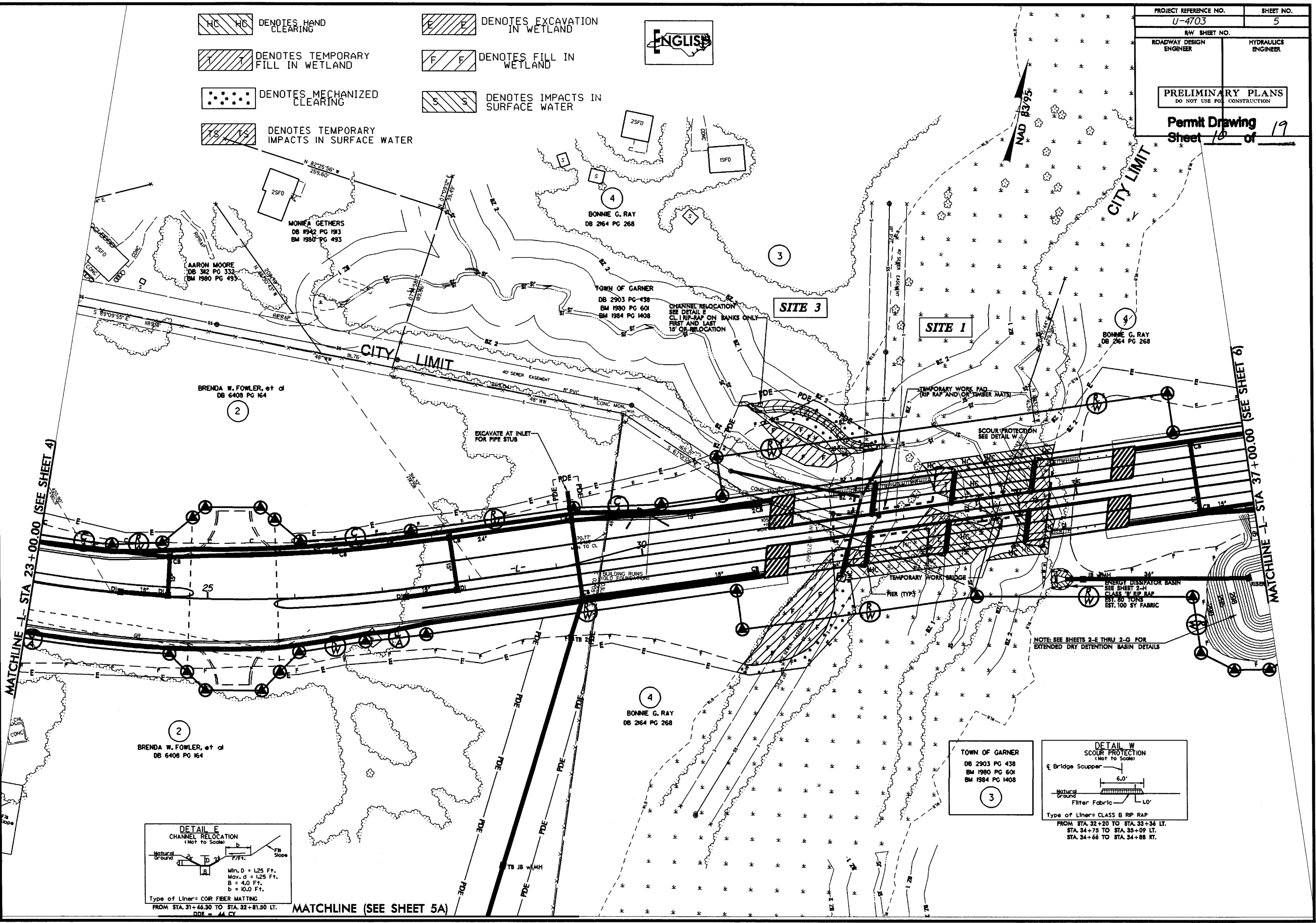


PLAN



DETAIL OF RIP-RAPPED OUTLET ENERGY DISSIPATOR BASIN

- | | |
|--|--------------------------------------|
| HC HC DENOTES HAND CLEARING | E E DENOTES EXCAVATION IN WETLAND |
| T T DENOTES TEMPORARY FILL IN WETLAND | F F DENOTES FILL IN WETLAND |
| DENOTES MECHANIZED CLEARING | S S DENOTES IMPACTS IN SURFACE WATER |
| TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER | |



REVISIONS
 R/W REVISION 12/02/09 DWG - THE TCE WAS REVISED AND THE PDE WAS REVISED TO PDE FOR THE DRY DETENTION BASIN RIGHT OF -L- STA. 29+25.00 ON PARCEL 2 (BRENDA W. FOWLER ET AL.)

09-DEC-2009 16:06
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REVISIONS

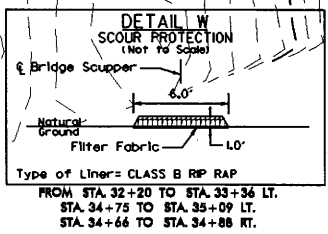
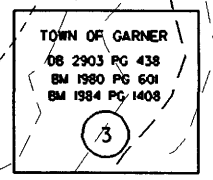
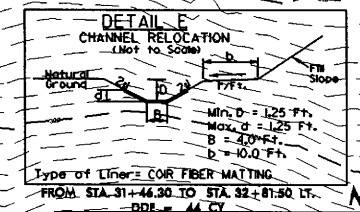
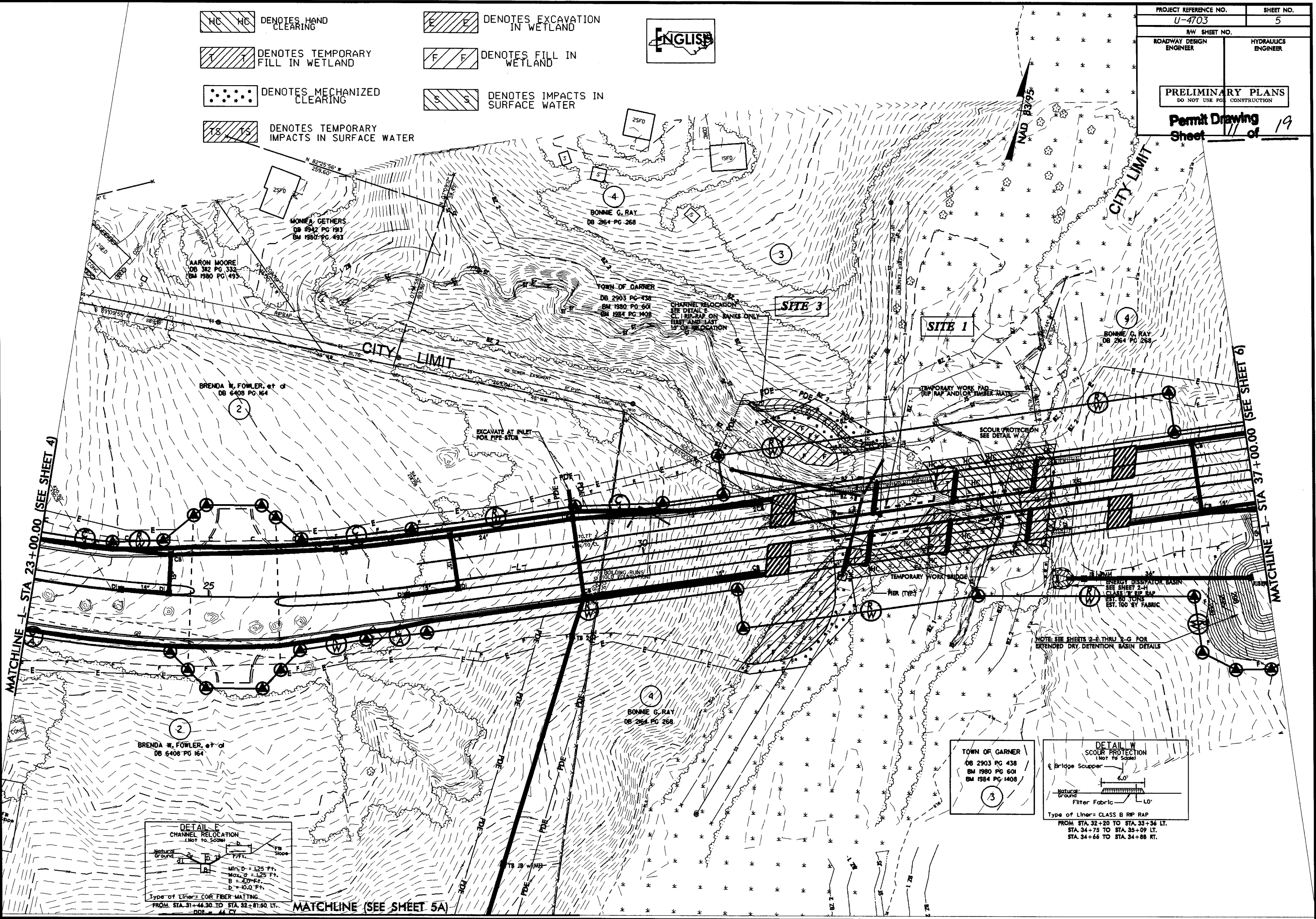
R/W REVISION (12/02/09) DWG - THE TCE WAS REVISED AND THE PDE WAS ADDED LEFT OF -L- STA.29+25.00, AND THE TCE WAS REVISED TO PDE FOR THE DRY DETENTION BASIN RIGHT OF -L- STA.29+25.00 ON PARCEL 2 (BRENDA W.FOWLER, ET AL).

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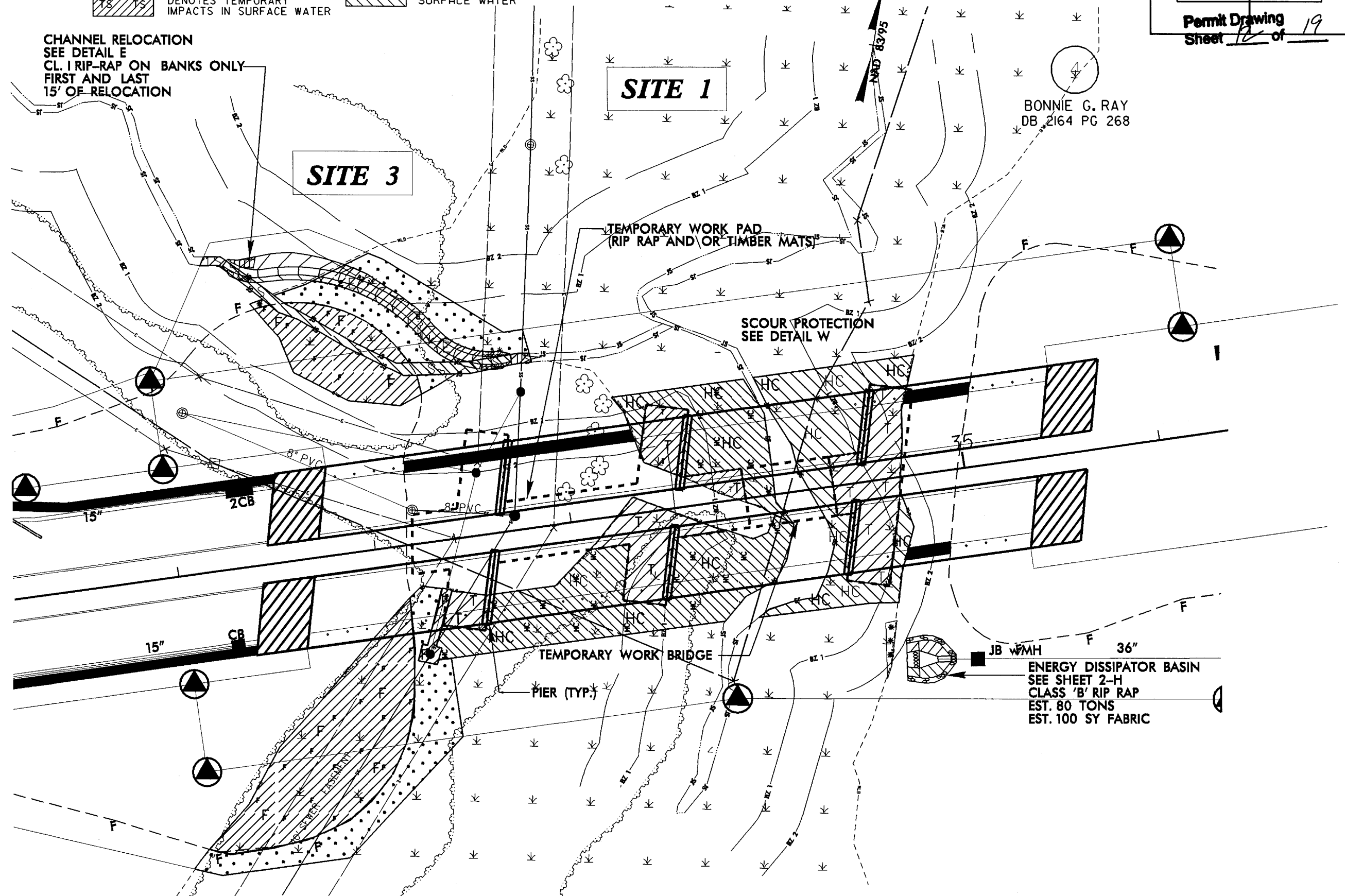
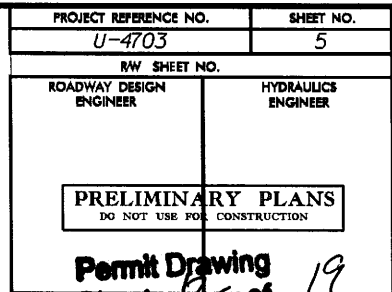
- | | | | |
|-------|--|-----|----------------------------------|
| HC HC | DENOTES HAND CLEARING | E E | DENOTES EXCAVATION IN WETLAND |
| T T | DENOTES TEMPORARY FILL IN WETLAND | F F | DENOTES FILL IN WETLAND |
| . . | DENOTES MECHANIZED CLEARING | S S | DENOTES IMPACTS IN SURFACE WATER |
| TS TS | DENOTES TEMPORARY IMPACTS IN SURFACE WATER | | |



PROJECT REFERENCE NO. U-4703		SHEET NO. 5
RAW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
Permit Drawing Sheet 11 of 19		



REVISIONS

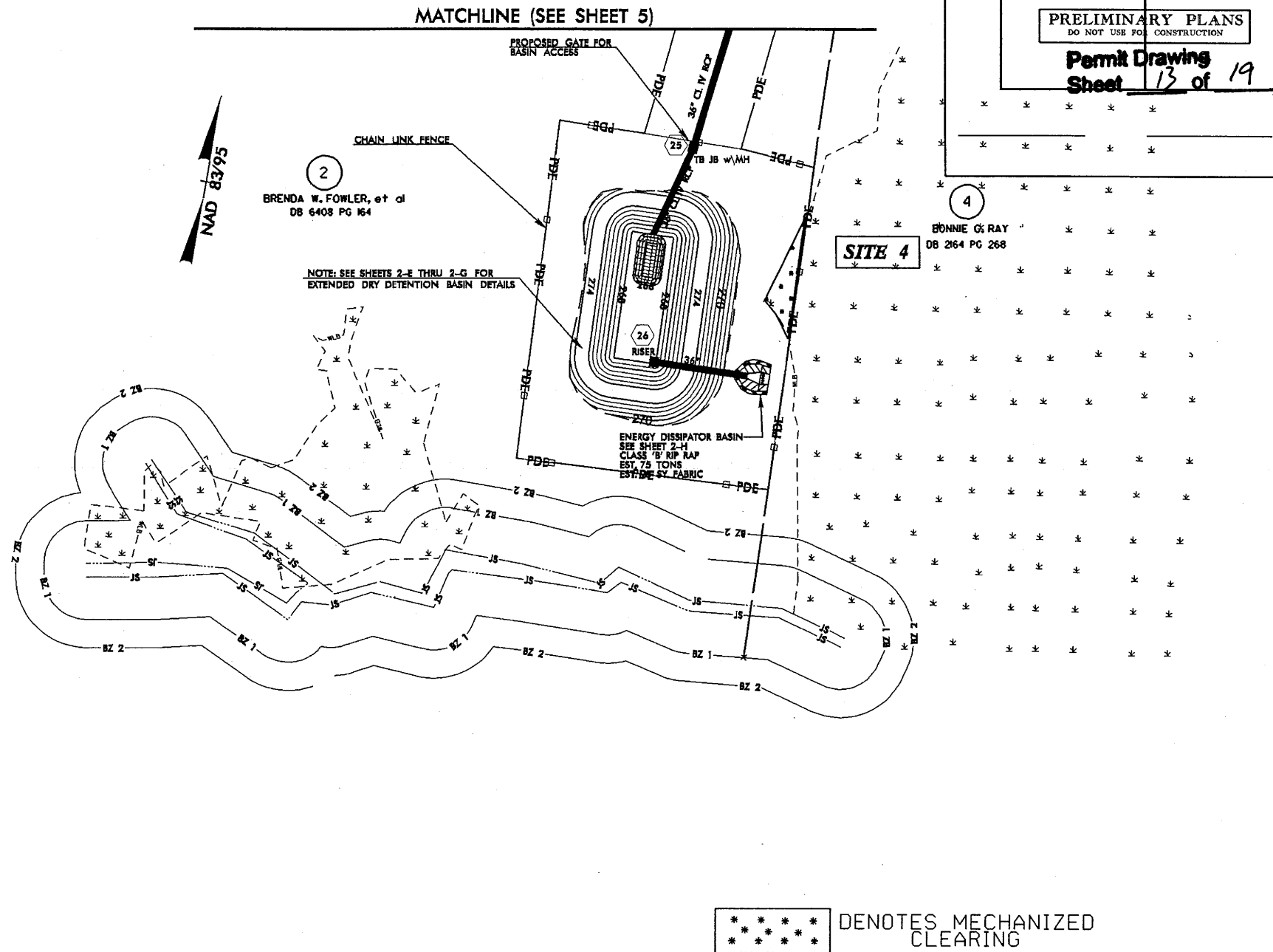


8/17/99

REVISIONS

R/W REVISION (12/02/09) DWG - THE ICE WAS REVISED TO PDE FOR THE DRY DETENTION BASIN RIGHT OF -1- STA 29+25.00 ON PARCEL 2 (BRENDA W. FOWLER ET AL.)

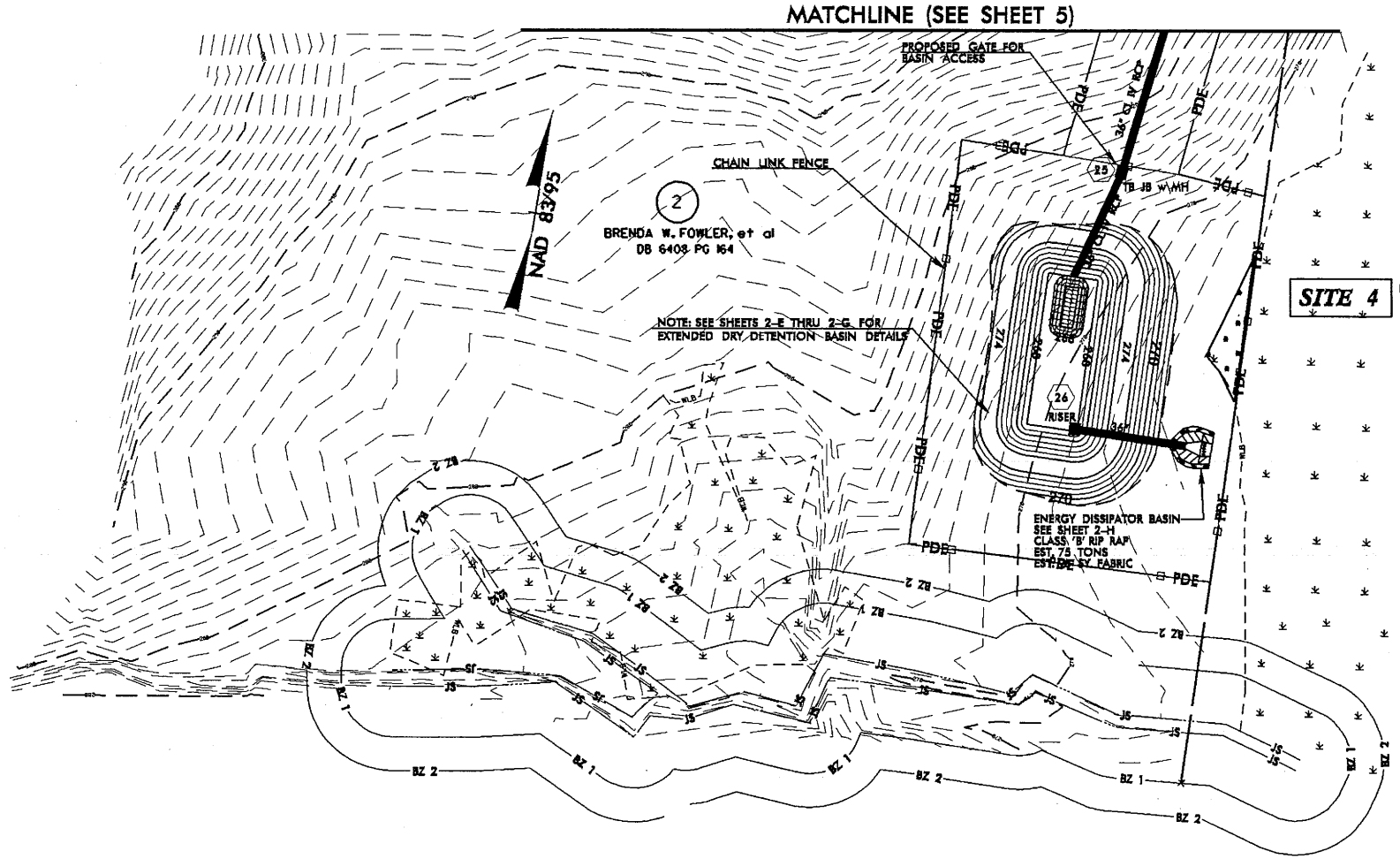
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8/17/99

REVISIONS
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***** DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO. U-4703		SHEET NO. 5A	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet 14 of 19			

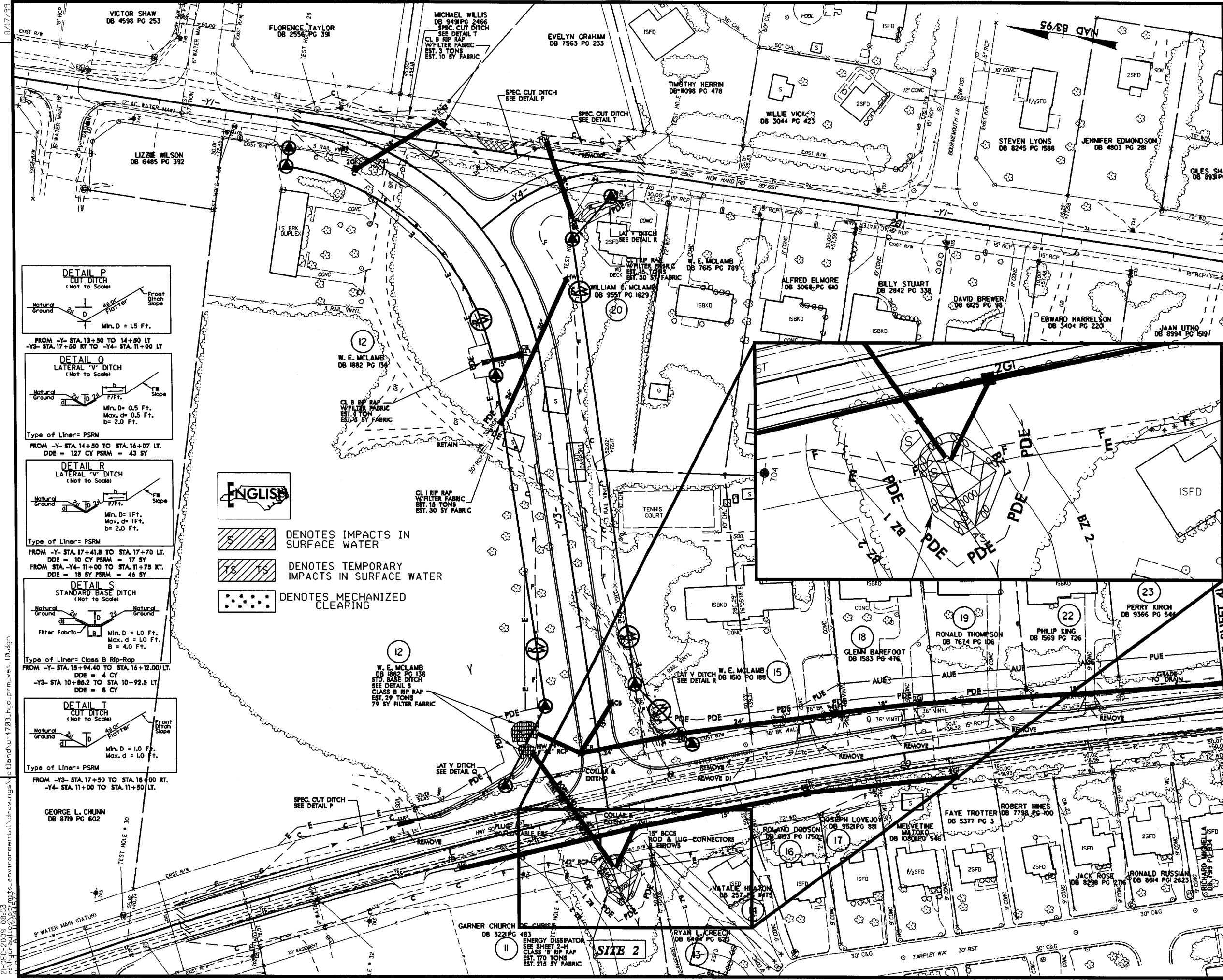
MATCHLINE -Y1- STA 24+00.00
(SEE SHEET 4)

AUE
AERIAL UTILITY EASEMENT

MATCHLINE -Y- STA 23+50.00 (SEE SHEET 4)

SEE SHEET 15 FOR -Y- PROFILE
SEE SHEET 16 FOR -Y1- PROFILE
SEE SHEET 18 FOR -Y3- & -Y4- PROFILES

REVISIONS
R/W REVISION (10/01/09) DWG - REVISED THE NOTE "DO NOT DISTURB SEPTIC DRAIN LINES TO DO NOT DISTURB DRAIN LINES WITHIN THE AUE ON PARCEL 18 (GLENN BAREFOOT), PARCEL 19 (RONALD THOMPSON), AND PARCEL 22 (PHILIP KING)."
21-DEC-2009 08:03
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- ENGLISH**
- DENOTES IMPACTS IN SURFACE WATER
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES MECHANIZED CLEARING

DETAIL P
CUT DITCH
(Not to Scale)

Min. D = 1.5 Ft.

FROM -Y- STA 13+50 TO 14+50 LT
-Y3- STA 17+50 RT TO -Y4- STA 11+00 LT

DETAIL Q
LATERAL "V" DITCH
(Not to Scale)

Min. D = 0.5 Ft.
Max. d = 0.5 Ft.
b = 2.0 Ft.

Type of Liner = PSRM

FROM -Y- STA 14+50 TO STA 16+07 LT
DDE = 127 CY PSRM = 43 SY

DETAIL R
LATERAL "V" DITCH
(Not to Scale)

Min. D = 1 Ft.
Max. d = 1 Ft.
b = 2.0 Ft.

Type of Liner = PSRM

FROM -Y- STA 17+41.8 TO STA 17+70 LT
DDE = 10 CY PSRM = 17 SY
FROM STA -Y4- 11+00 TO STA 11+75 RT
DDE = 18 SY PSRM = 46 SY

DETAIL S
STANDARD BASE DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.

Type of Liner = Class B Rip-Rap

FROM -Y- STA 15+94.40 TO STA 16+12.00 LT
DDE = 4 CY
-Y3- STA 10+85.2 TO STA 10+92.5 LT
DDE = 8 CY

DETAIL T
CUT DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.

Type of Liner = PSRM

FROM -Y3- STA 17+50 TO STA 18+00 RT
-Y4- STA 11+00 TO STA 11+50 LT

SITE 2

PROJECT REFERENCE NO. U-4703	SHEET NO. 10
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 16 of 19

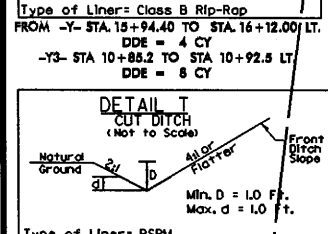
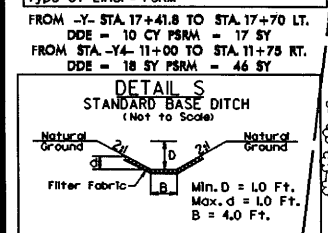
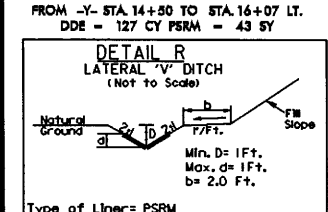
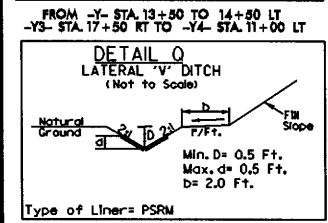
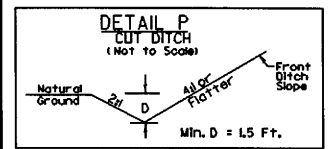
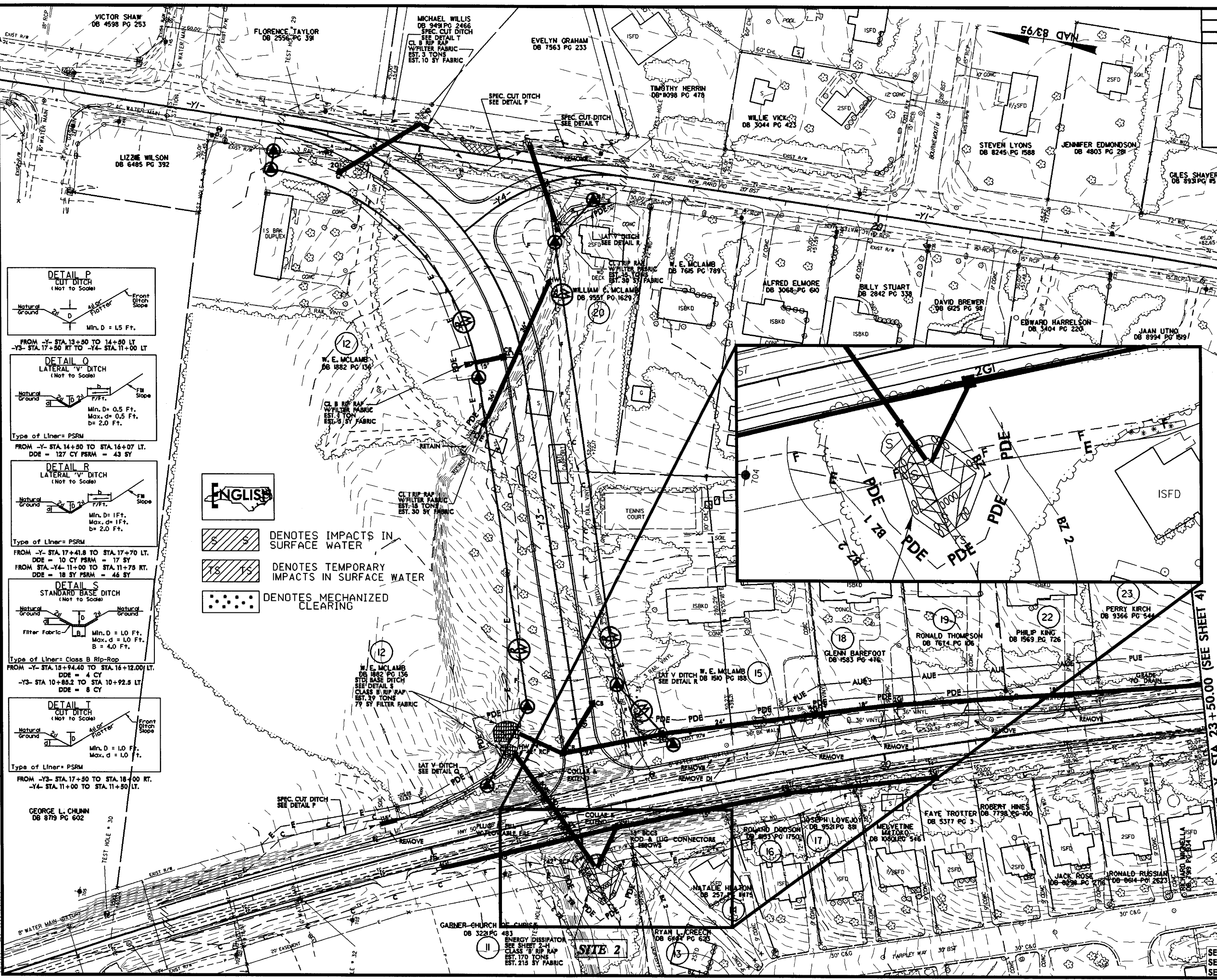
MATCHLINE -Y1- STA 24+00.00
(SEE SHEET 4)

AUE
AERIAL UTILITY EASEMENT

MATCHLINE -Y- STA 23+50.00 (SEE SHEET 4)

SEE SHEET 15 FOR -Y- PROFILE
SEE SHEET 16 FOR -Y1- PROFILE
SEE SHEET 18 FOR -Y3- & -Y4- PROFILES

REVISIONS
R/W REVISION 10/01/09/DWG - REVISED THE NOTE "DO NOT DISTURB SEPTIC DRAIN LINES TO 'DO NOT DISTURB DRAIN LINES WITHIN THE AUE ON PARCEL 18 (GLENN BAREFOOT), PARCEL 19 (RONALD THOMPSON), AND PARCEL 22 (PHILIP KING)."



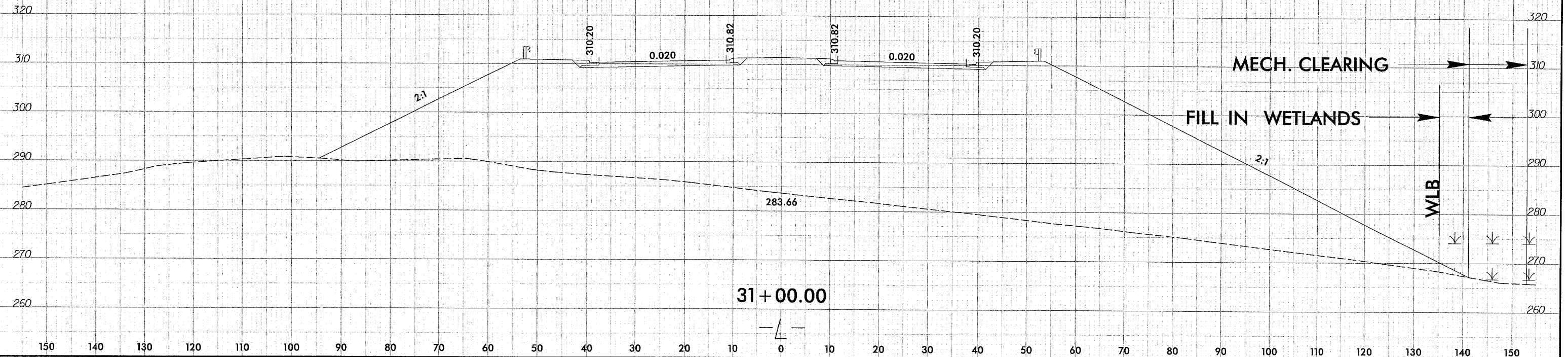
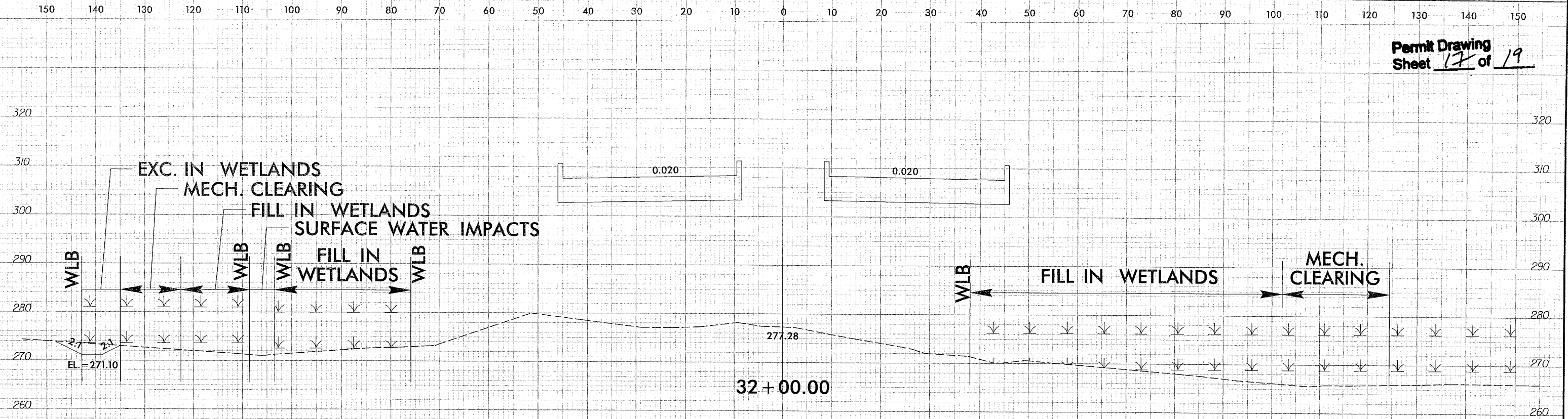
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

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User: JHY24577

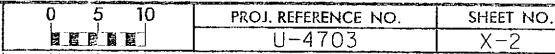
8/22/2019

0	5	10	PROJ. REFERENCE NO.	SHEET NO.
0	5	10	U-4703	X-1

Permit Drawing
Sheet 17 of 19

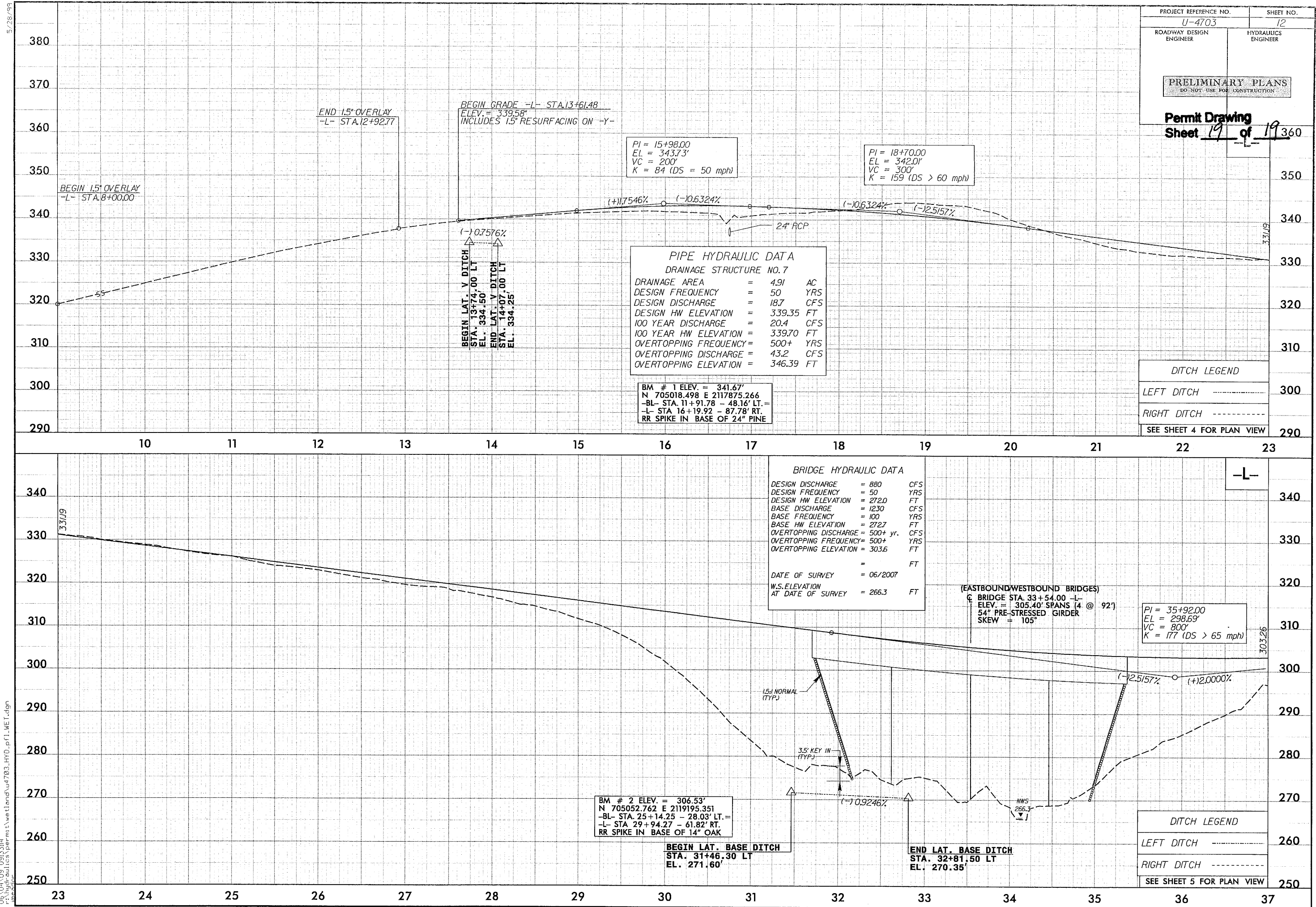


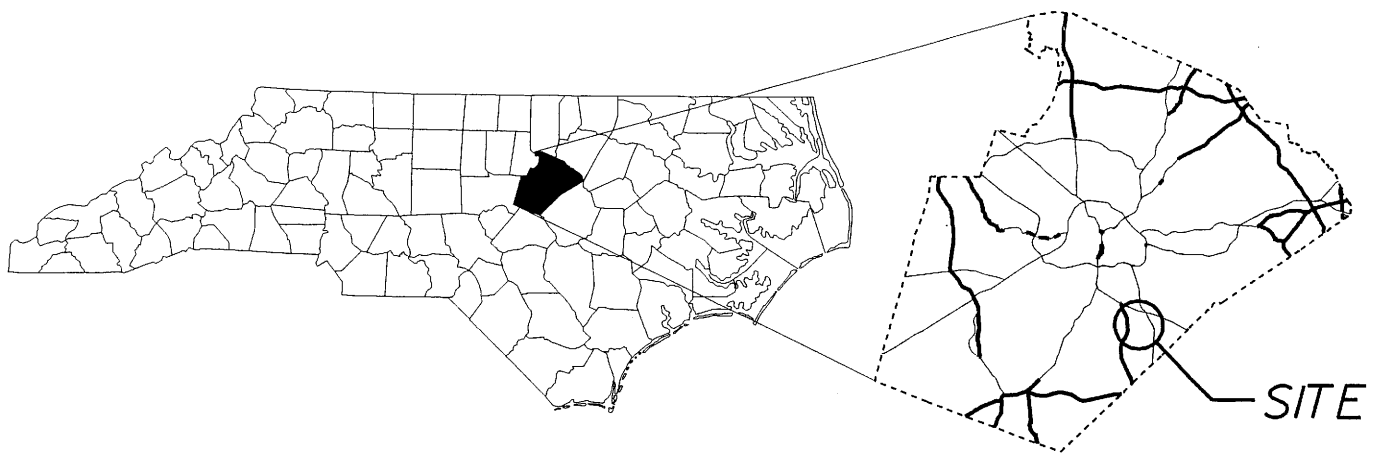
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5/28/99

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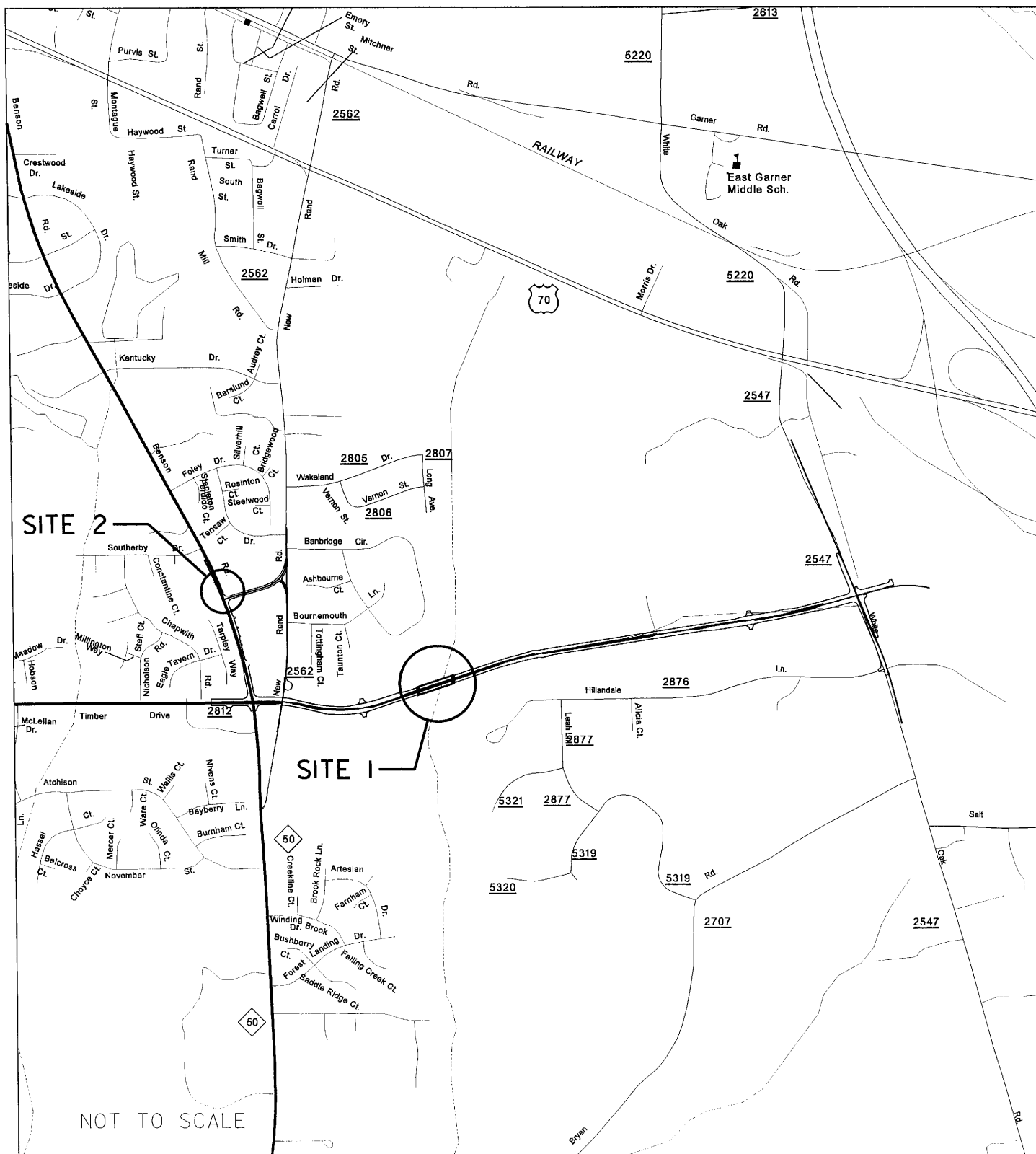
NEUSE RIVER BUFFER VICINITY MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 35871.1.1 (U4703)

TIMBER DR. EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547)

Buffer Drawing
Sheet 1 of 14



NEUSE RIVER BUFFER LOCATION MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 35871.1.1 (U4703)

TIMBER DR. EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547)

Buffer Drawing
Sheet 2 of 14

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
3	First Union National Bank	First Union National Bank, c/o Cheryl Welch First Union Plaza, Cont-2, Charlotte, NC 28288
4	Bonnie G. Ray	420 Hillandale Lane, Garner NC 27529
11	Garner Church of Christ	118 Park Ave, Fuquay-Varina NC 27526
13	Ryan L. Creech	101 Tarpley Way, Garner NC 27529
14	Heidi K. Moore	103 Tarpley Way, Garner NC 27529
N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS WAKE COUNTY PROJECT: 35871.1.1 (U-4703) 6/17/2009 Sheet 3 of 14		

R:\z-misc\Hydro\Buffprop.xls

BUFFER IMPACTS SUMMARY

			IMPACT										BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE		ALLOWABLE			MITIGABLE			TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)	
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)				
1	368' BRIDGE	-L- 33+13 TO 34+76		X		7875	5295	13170						
1	ENERGY DISS.	-L- 34+49 TO 34+60 RT	X				104	104						
2	42" PIPE	-Y- 15+90 TO 17+18 RT	X			3921	1512	5433						
3	ROADWAY	-L- 31+07 TO 33+59 LT			X				10601	6002	16603			
													</	

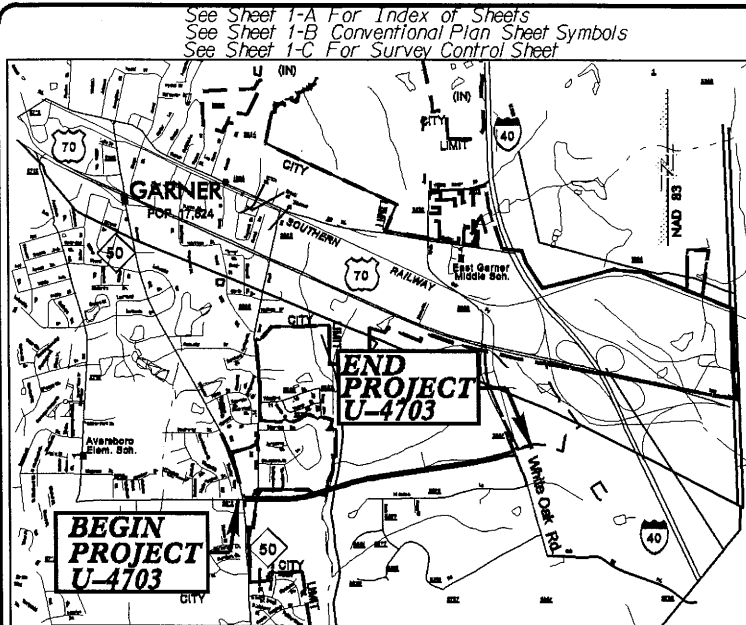
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35871.1.1 (U-4703)

Sheet 4 of 14 12/7/2009

TIP PROJECT: U-4703

CONTRACT:



VICINITY MAP

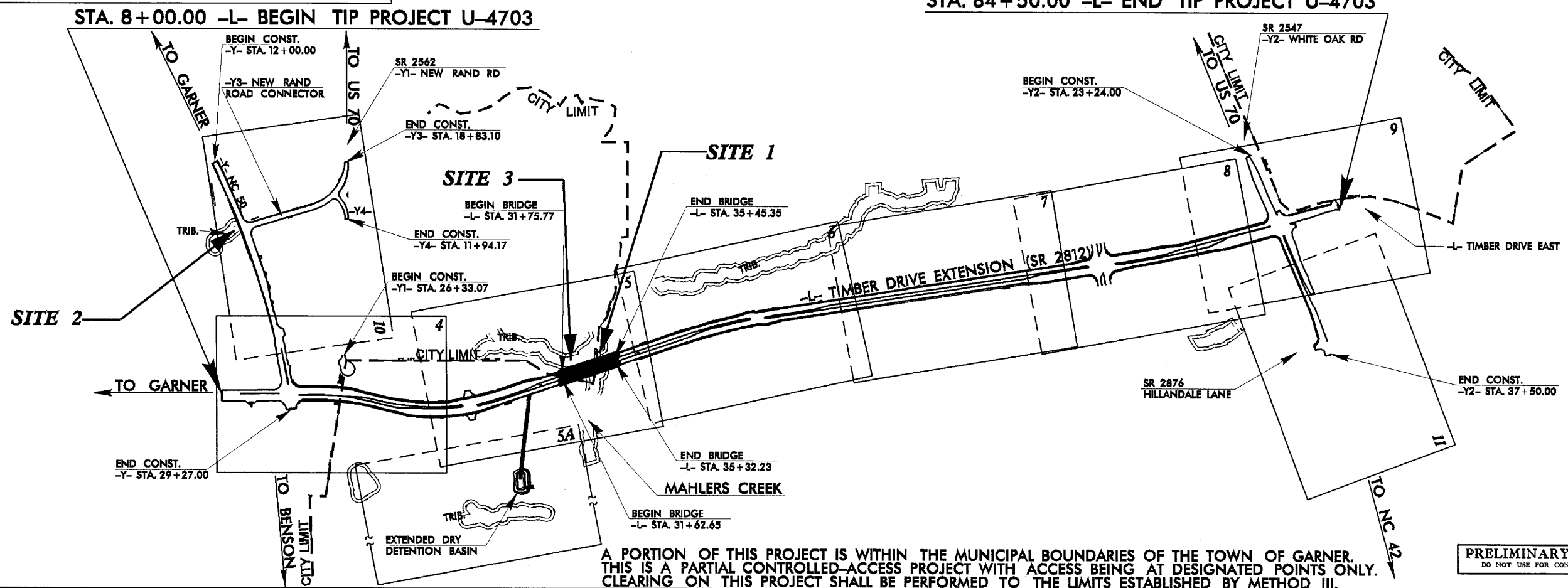
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

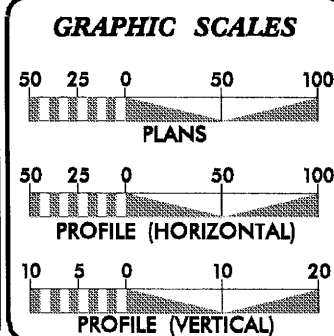
LOCATION: **TIMBER DRIVE EAST EXTENSION (SR 2812)**
FROM NC 50 TO WHITE OAK ROAD (SR 2547) IN GARNER

TYPE OF WORK: **NEUSE RIVER BASIN - BUFFER PERMIT DRAWINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4703	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
35871.1.1	STP-0508(2)	PE	
35871.2.1	STP-0508(2)	R/W & UTILITIES	
35871.3.1	STPDA-0508(3)	CONST.	



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF GARNER.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING AT DESIGNATED POINTS ONLY.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.



DESIGN DATA	
ADT 2009 =	15,435
ADT 2030 =	24,000
DHV =	10 %
D =	55 %
T =	6 % *
V =	50 MPH
* TTST 2%	DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4703 = 1.379 mi.
LENGTH STRUCTURE OF TIP PROJECT U-4703 = 0.070 mi.
TOTAL LENGTH OF TIP PROJECT U-4703 = 1.449 mi.

Prepared in the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: AUGUST 20, 2008	JAMES A. SPEER, PE PROJECT ENGINEER
LETTING DATE: MAY 18, 2010	DANIEL W. GARDNER, JR., PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE HIGHWAY DESIGN ENGINEER	

8/2/09

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PROJECT REFERENCE NO.
U-4703

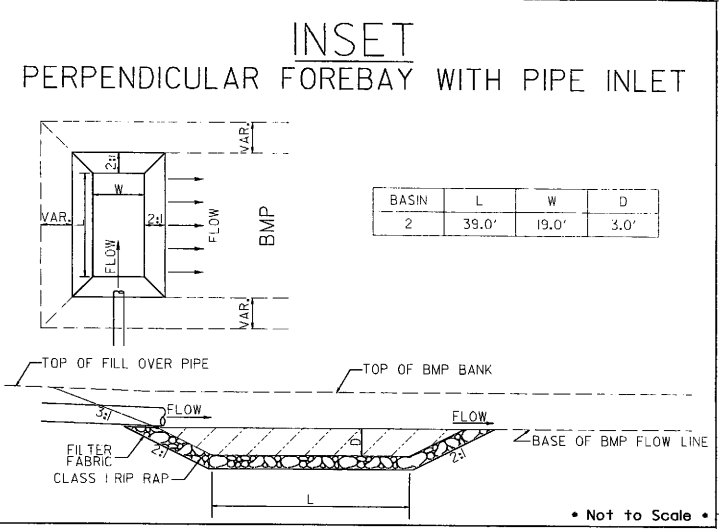
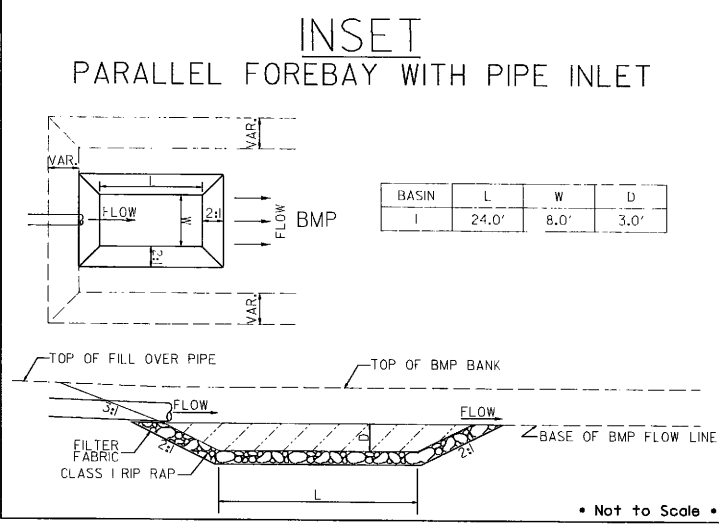
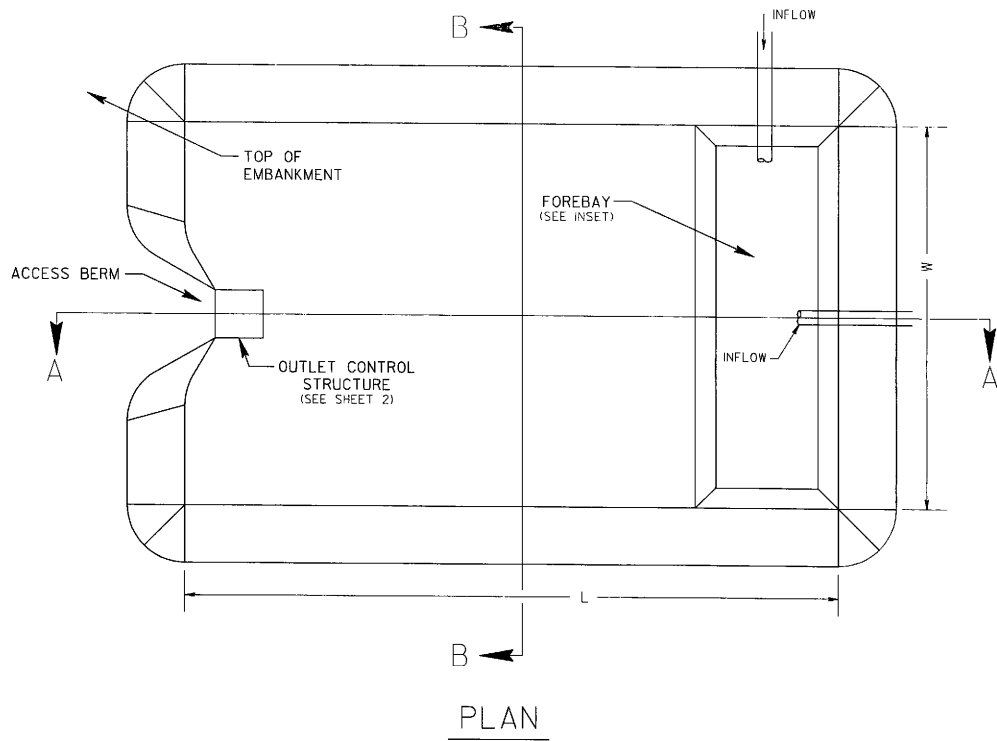
SHEET NO.
2-E

HYDRAULICS
ENGINEER

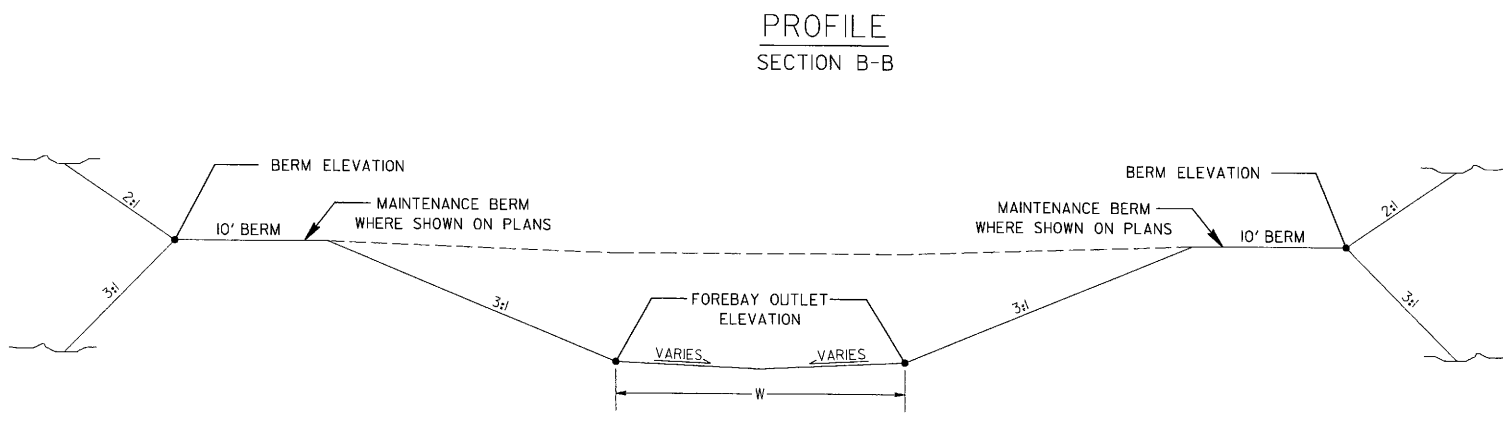
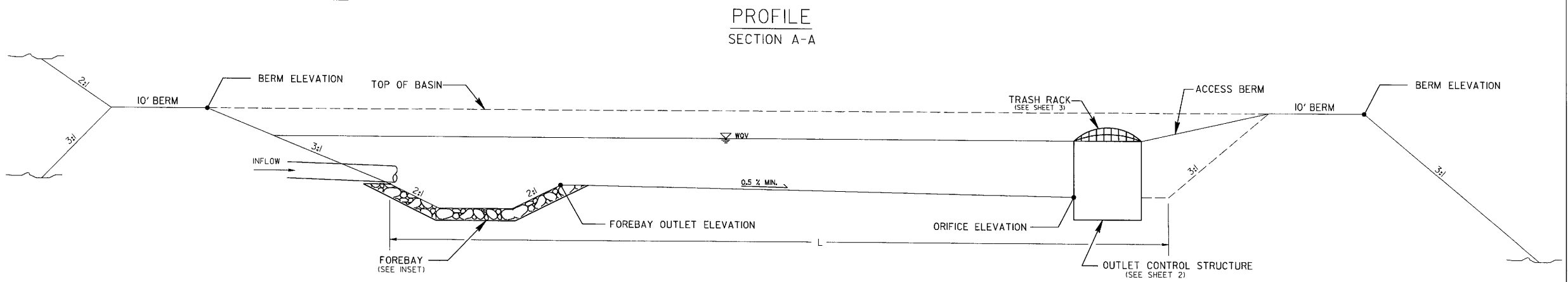
INCOMPLETE PLANS
DO NOT USE FOR A/E ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing
Sheet 7 of 14



REFERENCED DRAWINGS
SHEET 2 - DRY DETENTION BASIN "OUTLET CONTROL STRUCTURE"
SHEET 3 - DRY DETENTION BASIN "TRASH RACKS"



BASIN	L	W	FOREBAY OUTLET ELEV.	ORIFICE ELEV.	BERM ELEV.
1	90.0'	30.0'	268.0	267.7	274.0
2	138.0	51.0'	292.0	290.2	298.0

DRY DETENTION BASIN
BASIN DETAILS

DRY DETENTION BASIN
BASIN DETAILS

NOT TO SCALE

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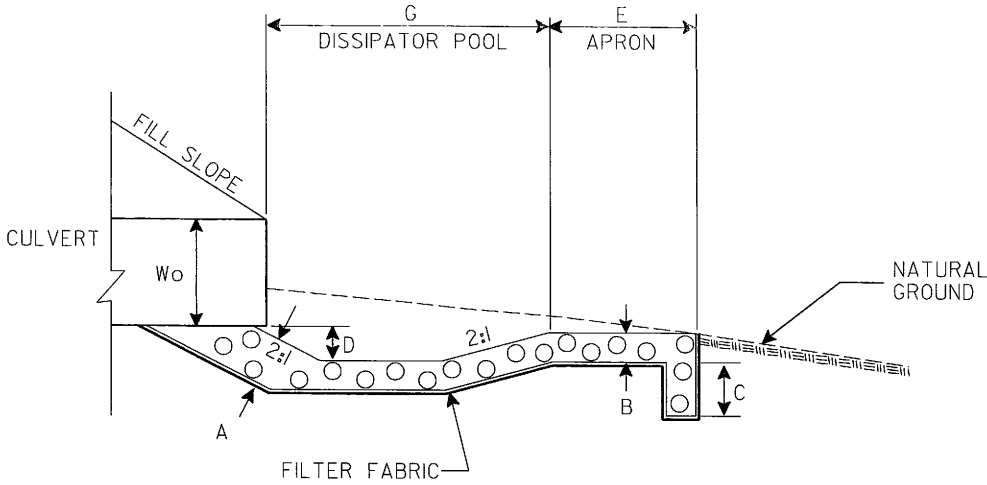
PROJECT REFERENCE NO. U-4703	SHEET NO. 2-H
HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Buffer Drawing Sheet 8 of 14	

	RIP RAP BASIN #		
DIM.	1	2	3
A	2.0'	2.0'	2.0'
B	1.5'	1.5'	1.5'
C	2.0'	2.0'	0.0'
D	1.0'	1.0'	1.25'
E	4.5'	5.0'	6.5'
F	13.0'	13.0'	16.0'
G	9.5'	10.0'	12.5'

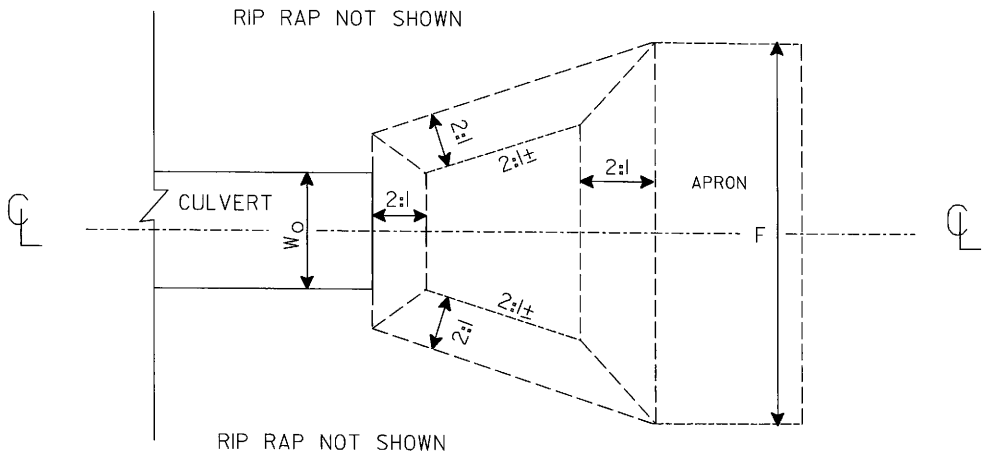
ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	Sta 27+37 -L- (R+)
2	Sta 34+59 -L- (R+)
3	Sta 16+67.50 -Y- (R+)

SECTION



PLAN

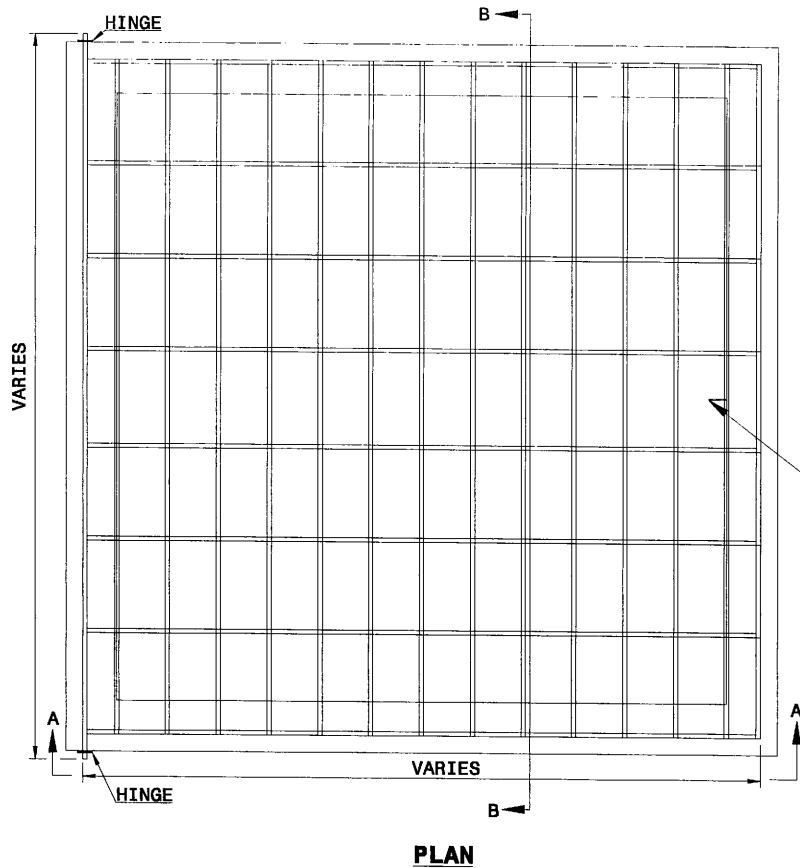


DETAIL OF RIP-RAPPED OUTLET ENERGY DISSIPATOR BASIN

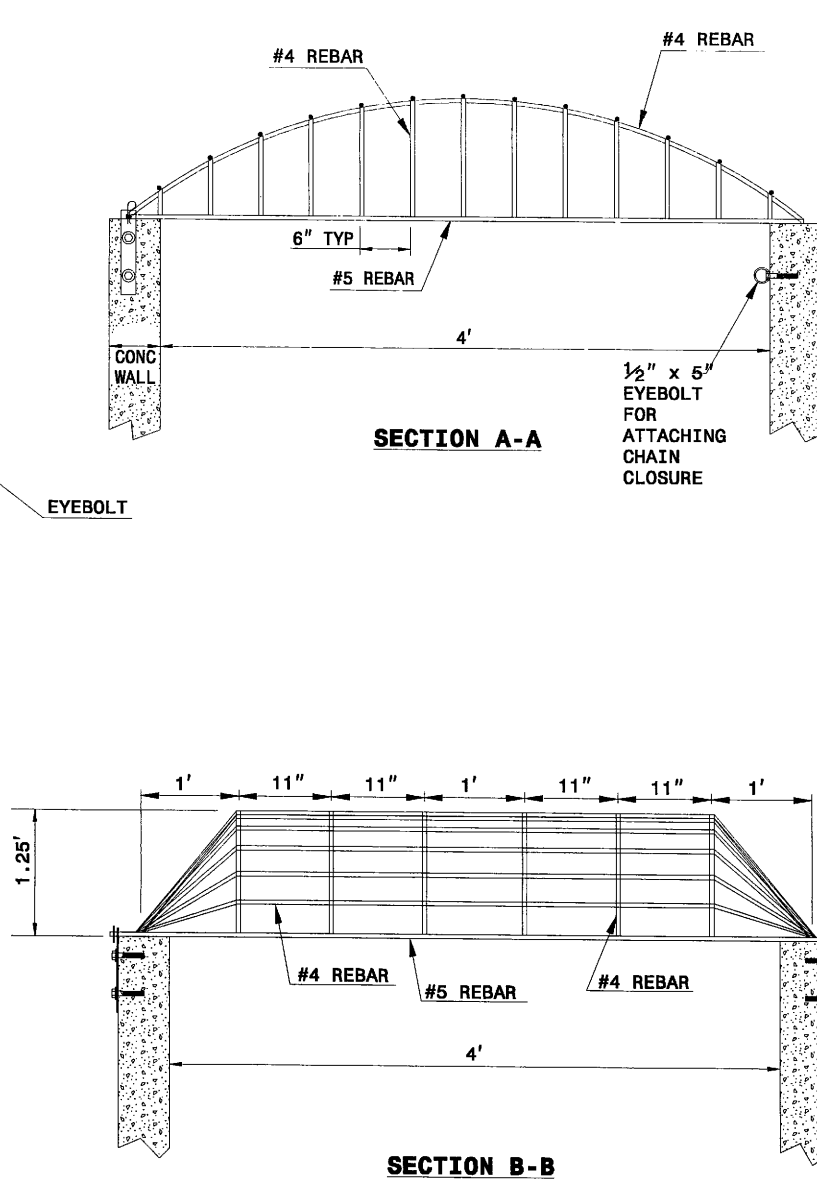
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DRY DETENTION BASIN
TRASH RACKS



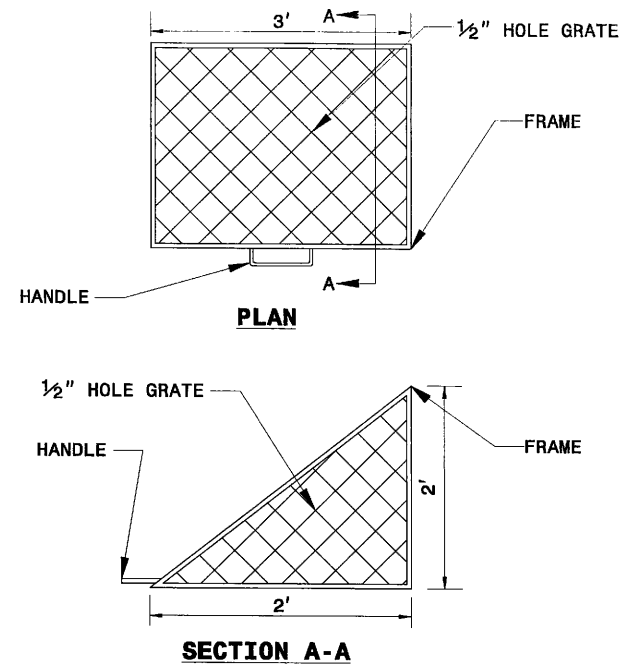
- RISER TRASH RACK NOTES:**
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
 3. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A153.



REBAR TRASH RACK

*** NOT TO SCALE**

PROJECT REFERENCE NO. U-4703	SHEET NO. 2-6
HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/C ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Buffer Drawing Sheet 9 of 14	



- ORIFICE TRASH RACK NOTES:**
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
 3. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A153.

REMOVABLE ORIFICE TRASH RACK

DRY DETENTION BASIN
TRASH RACKS

5/2/98

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PROJECT REFERENCE NO.
U-4703

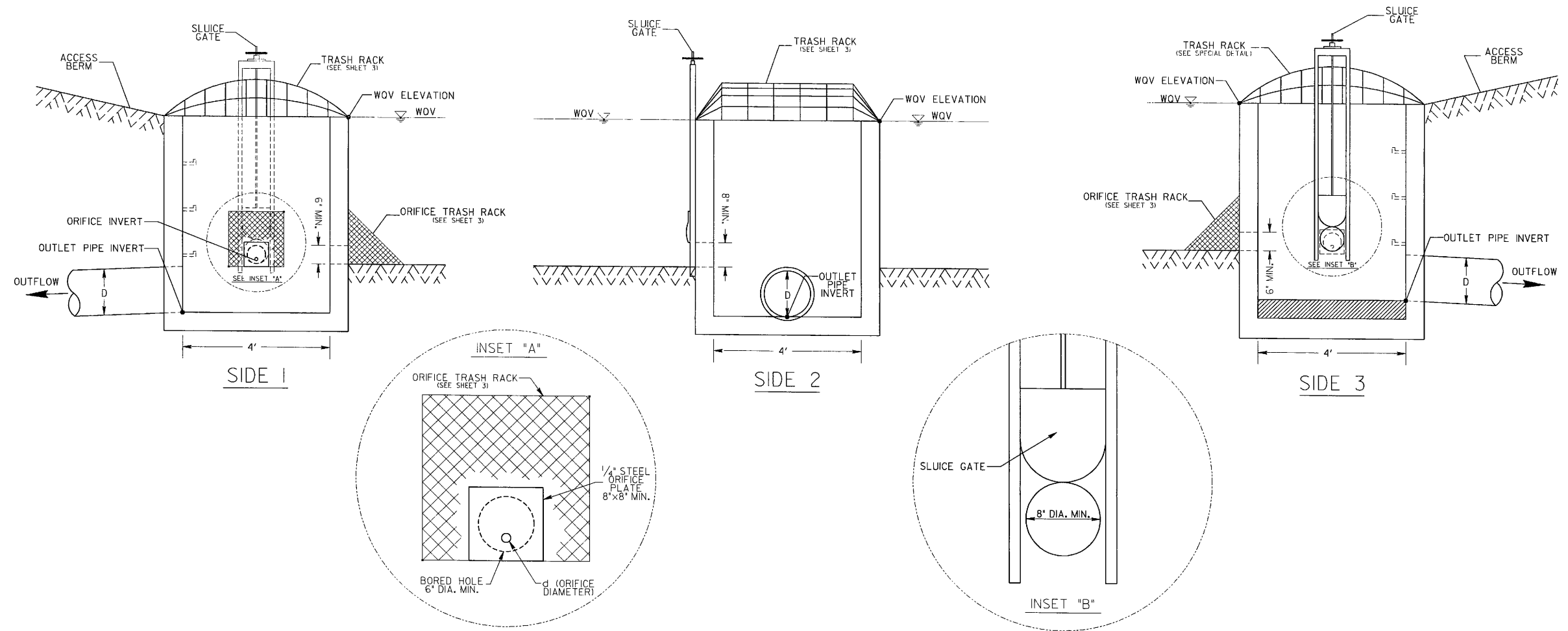
SHEET NO.
2-F

HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing
Sheet 10 of 14

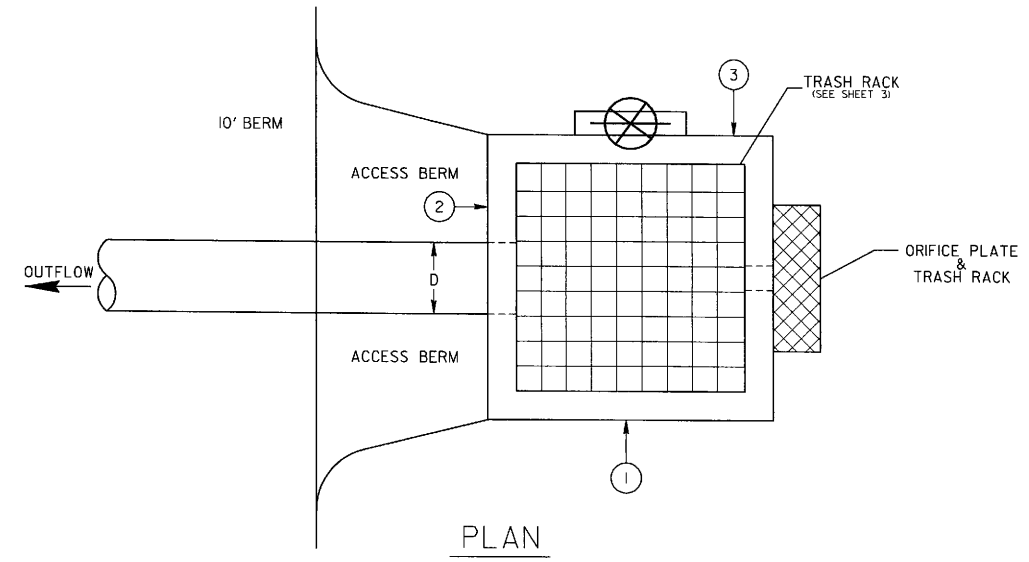


- NOTES
- 8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION.
 - FOR OUTLET STRUCTURE USE PRECAST DRAINAGE STRUCTURE STD. 840.45. PRECAST KNOCKOUT WALLS NOT ALLOWED. SOLID WALLS ONLY.

REFERENCED DRAWINGS

SHEET 1- DRY DETENTION BASIN "BASIN DETAILS"
SHEET 3 - DRY DETENTION BASIN "TRASH RACKS"

BASIN	-L- STATION	WOV ELEV.	ORIFICE INVERT	OUTLET PIPE INVERT	D (IN), OUTLET DIAMETER	d (IN), ORIFICE DIAMETER
1	27+00 RT	271.0	267.7	267.0	36"	1.25"
2	37+50 RT	295.0	290.2	289.0	36"	2.00"



DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

NOT TO SCALE

REVISIONS
R/W REVISION (12/02/09) DWG - THE TCE WAS REVISED AND THE PDE WAS ADDED LEFT OF -L- STA.29+25.00 AND THE TCE WAS REVISED TO PDE FOR THE DRY
DETENTION BASIN RIGHT OF -L- STA.29+25.00 ON PARCEL 2 (BRENDA W.FOWLER ET AL.)

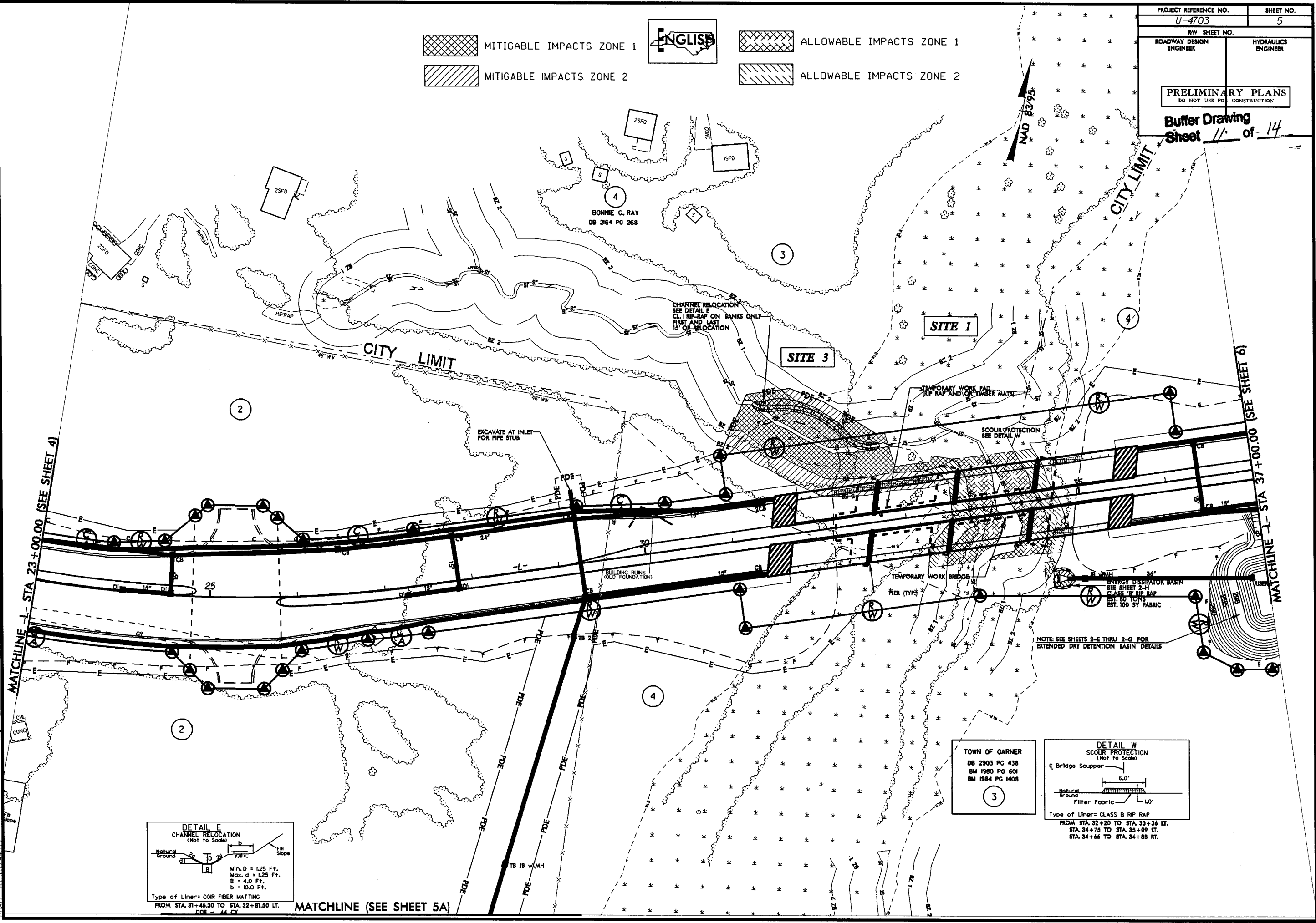
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MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2



ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. U-4703		SHEET NO. 5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Buffer Drawing Sheet 11 of 14			



DETAIL E
CHANNEL RELOCATION
(Not to Scale)

Min. D = 125 Ft.
Max. d = 125 Ft.
B = 4.0 Ft.
b = 10.0 Ft.

Type of Liner = COR FIBER MATTING
FROM STA. 31+46.30 TO STA. 32+61.50 LT.
PDE = 44 CY

TOWN OF GARNER
DB 2903 PG 438
BM 1980 PG 601
BM 1984 PG 1408

DETAIL W
SCOUR PROTECTION
(Not to Scale)

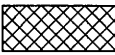
Type of Liner = CLASS B RIP RAP
FROM STA. 32+20 TO STA. 33+34 LT.
STA. 34+75 TO STA. 35+09 LT.
STA. 34+66 TO STA. 34+88 RT.

REVISIONS

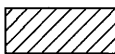
R/W REVISION (12/02/09) DWG - THE TCE WAS REVISED AND THE PDE WAS ADDED LEFT OF -L- STA.29+25.00; AND THE TCE WAS REVISED TO PDE FOR THE DRY DETENTION BASIN RIGHT OF -L- STA.29+25.00 ON PARCEL 2 (BRENDA W.FOWLER ET AL).

8/17/99

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MITIGABLE IMPACTS ZONE 1



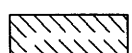
MITIGABLE IMPACTS ZONE 2



ENGLISH

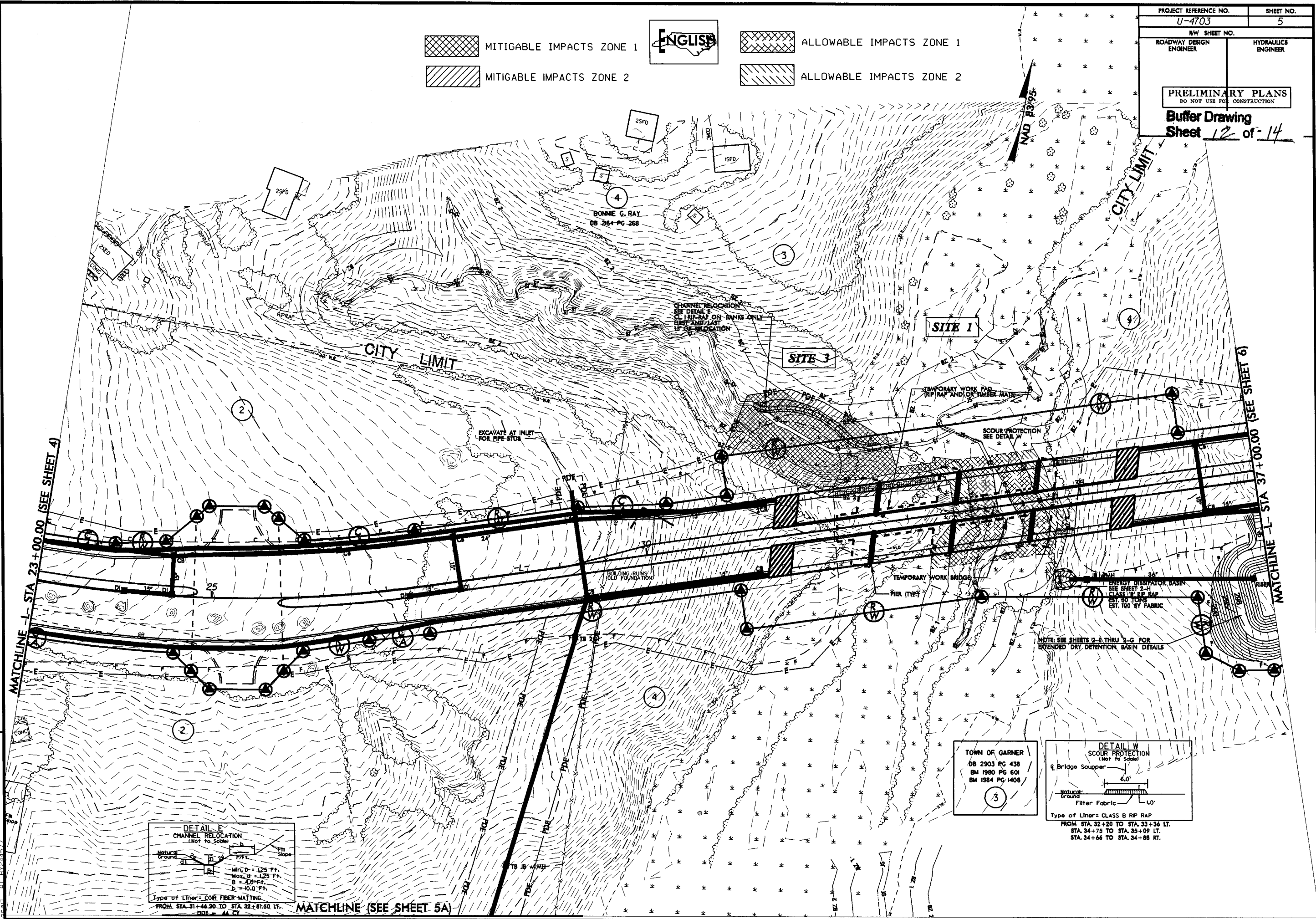


ALLOWABLE IMPACTS ZONE 1

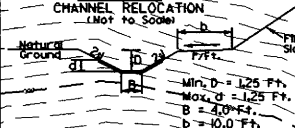


ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. U-4703		SHEET NO. 5
R/W SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
Buffer Drawing Sheet 12 of 14		



DETAIL E
CHANNEL RELOCATION
(NOT TO SCALE)



Min. D = 1.25 Ft.
Max. D = 1.25 Ft.
B = 4.0 Ft.
b = 10.0 Ft.

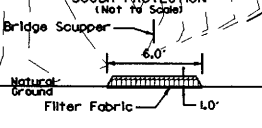
Type of Liner = CORR. FIBER-MATTING

FROM STA. 31+46.30 TO STA. 32+81.50 LT.
PDE = 44 CY

TOWN OF GARNER
DB 2903 PG 438
BM 1980 PG 601
BM 1984 PG 1408

3

DETAIL W
SCOUR PROTECTION
(NOT TO SCALE)



Type of Liner = CLASS B RIP RAP

FROM STA. 32+20 TO STA. 33+36 LT.
STA. 34+75 TO STA. 35+09 LT.
STA. 34+66 TO STA. 34+88 RT.

MATCHLINE -Y1- STA 24+00.00
(SEE SHEET 4)

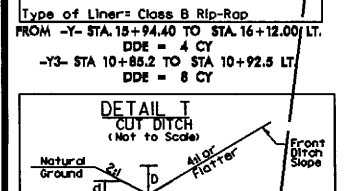
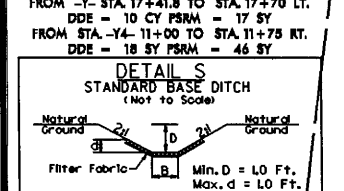
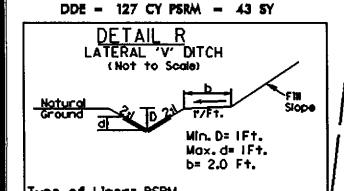
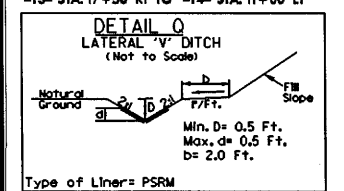
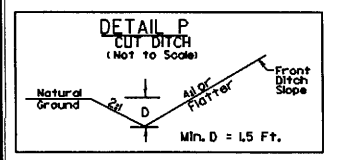
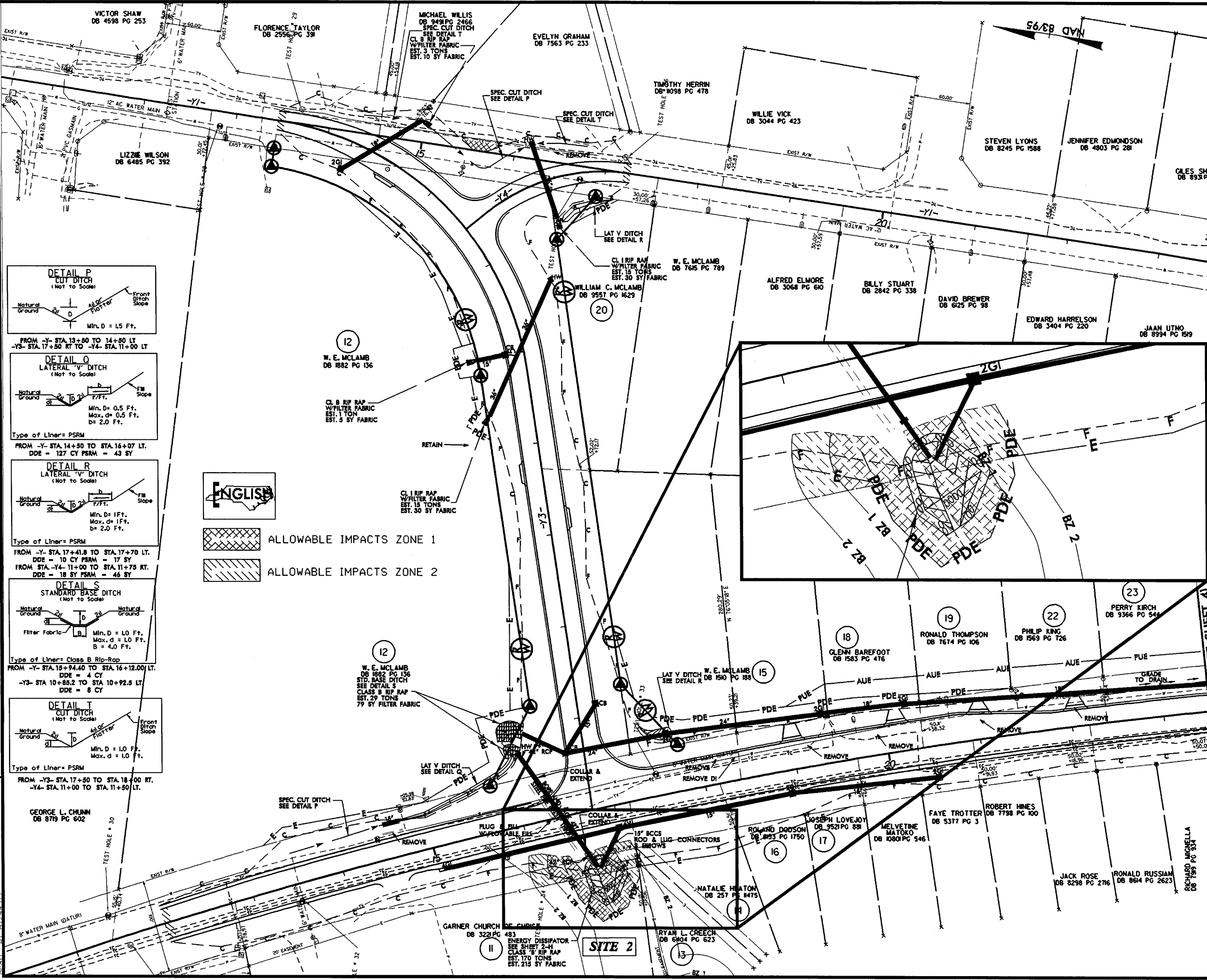
AUE
AERIAL UTILITY EASEMENT

MATCHLINE -Y1- STA 23+50.00 (SEE SHEET 4)

SEE SHEET 15 FOR -Y- PROFILE
SEE SHEET 16 FOR -Y1- PROFILE
SEE SHEET 18 FOR -Y3- & -Y4- PROFILES

REVISIONS

R/W REVISION (10/01/09) DWG - REVISED THE NOTE "DO NOT DISTURB SEPTIC DRAIN LINES TO DO NOT DISTURB DRAIN LINES WITHIN THE AUE ON PARCEL 18 (GLENN BAREFOOT), PARCEL 19 (RONALD THOMPSON), AND PARCEL 22 (PHILIP KING).



- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

SITE 2

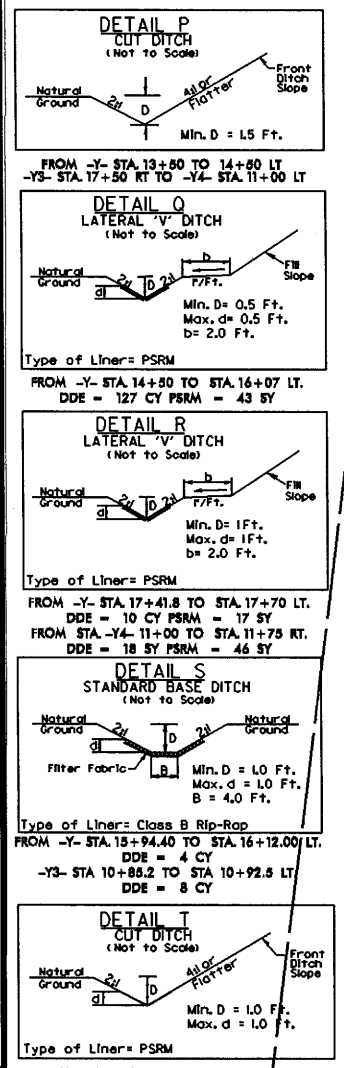
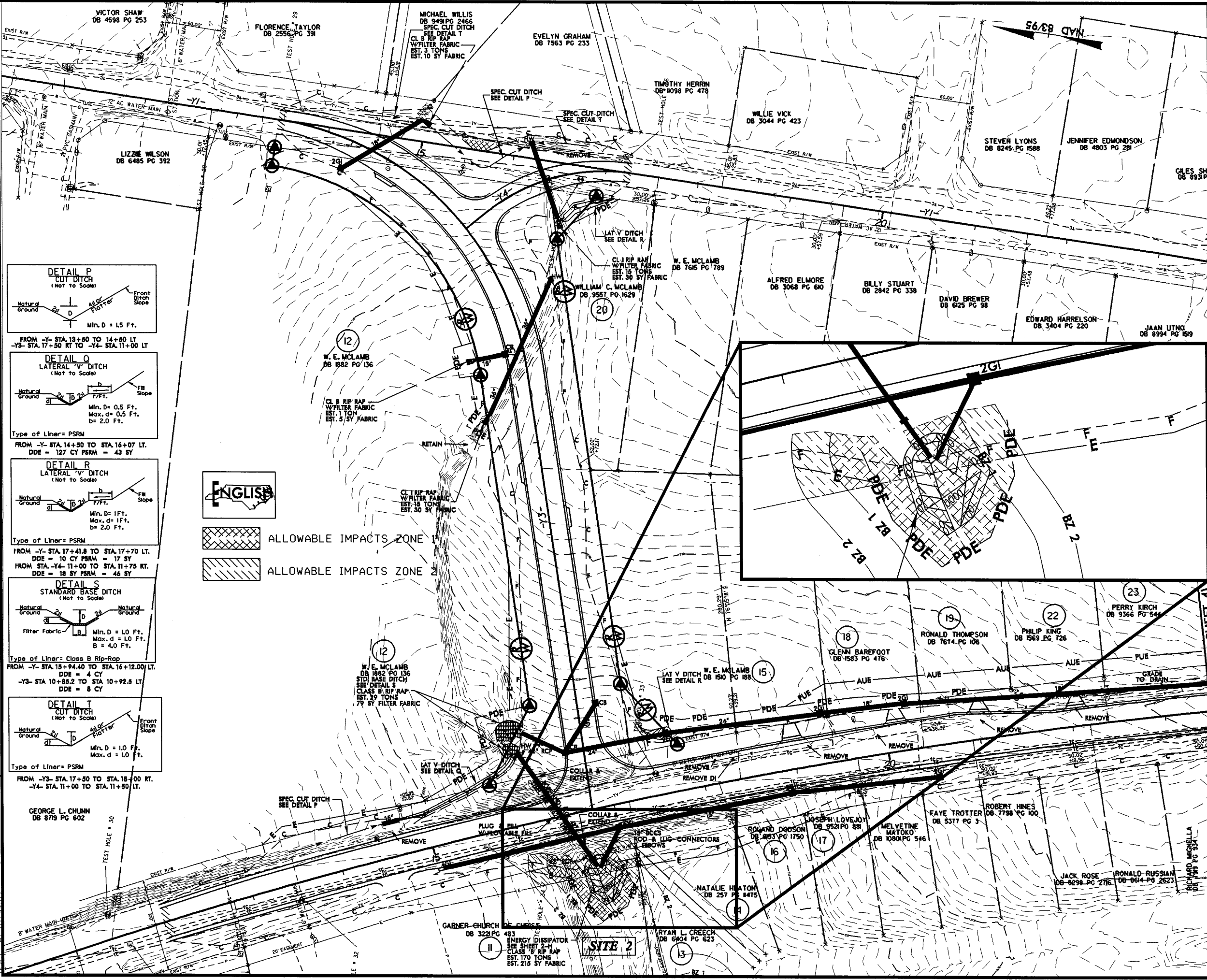
MATCHLINE -Y1- STA 24+00.00
(SEE SHEET 4)

AUE
AERIAL UTILITY EASEMENT

MATCHLINE -Y- STA 23+50.00 (SEE SHEET 4)

SEE SHEET 15 FOR -Y- PROFILE
SEE SHEET 16 FOR -Y1- PROFILE
SEE SHEET 18 FOR -Y3- & -Y4- PROFILES

REVISIONS
R/W REVISION (10/01/09) DWG - REVISED THE NOTE "DO NOT DISTURB SEPTIC DRAIN LINES TO 'DO NOT DISTURB DRAIN LINES' WITHIN THE AUE ON PARCEL 18 (GLENN BAREFOOT), PARCEL 19 (RONALD THOMPSON), AND PARCEL 22 (PHILIP KING).
21-DEC-2009 08:00
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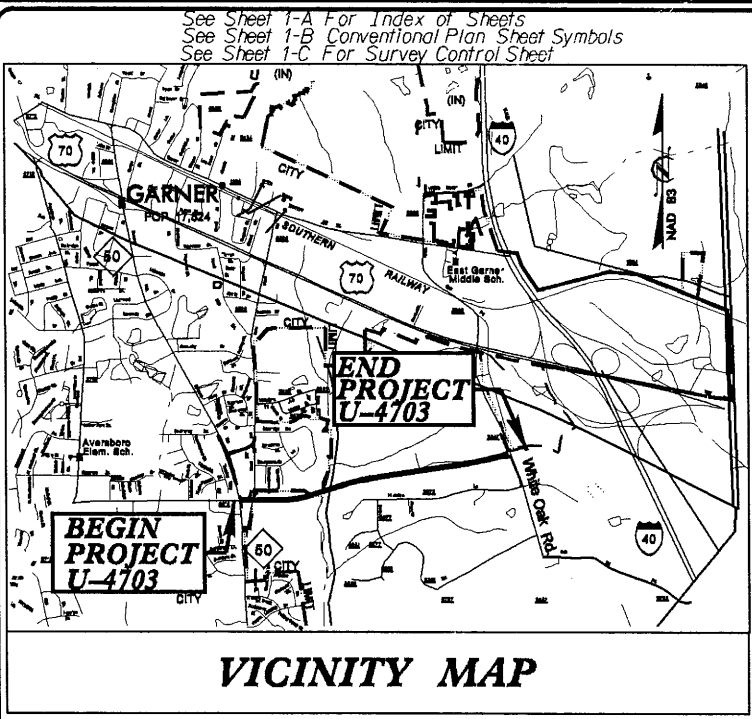


ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

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\$\$\$\$\$USERNAME\$\$\$\$\$

TIP PROJECT: U-4703

CONTRACT:

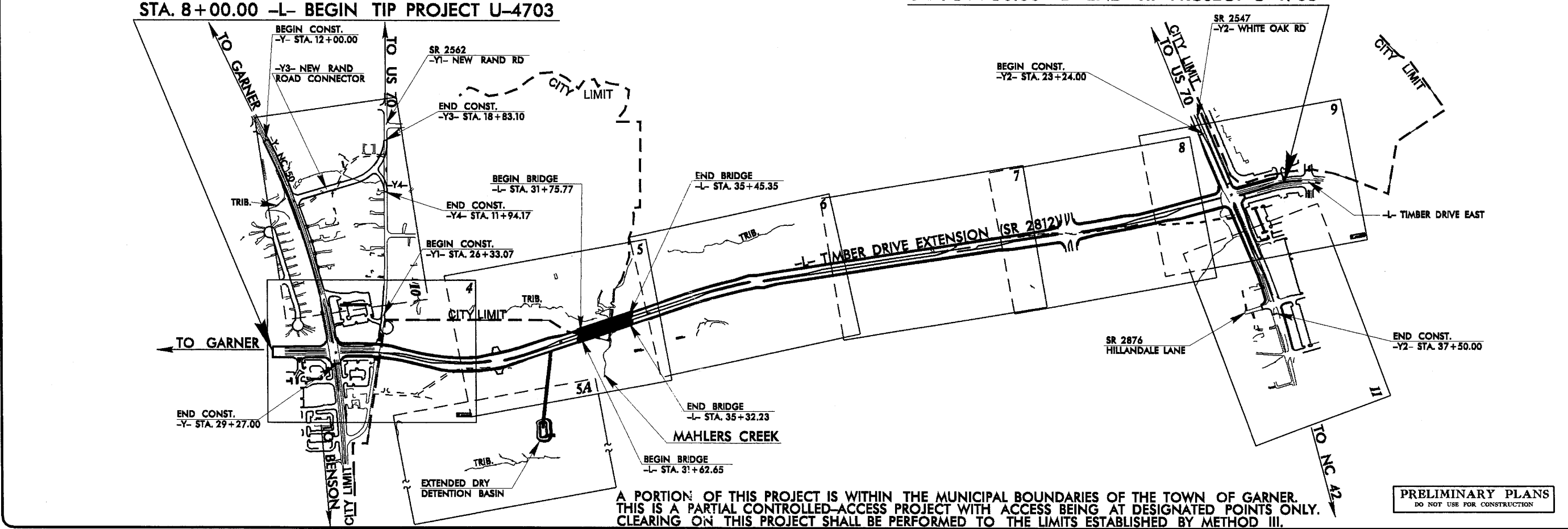


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

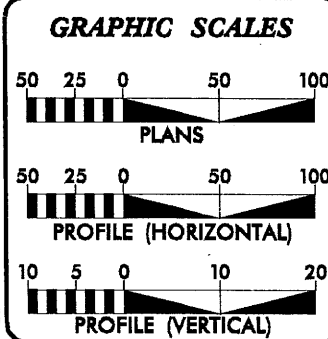
**LOCATION: TIMBER DRIVE EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547) IN GARNER**

**TYPE OF WORK: GRADING, DRAINAGE, WIDENING, PAVING, CURB & GUTTER,
STRUCTURES, AND SIGNALS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4703	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
35871.1.1	STP-0508(2)	PE	
35871.2.1	STP-0508(2)	RW & UTILITIES	
35871.3.1	STPDA-0508(3)	CONST.	



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF GARNER.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING AT DESIGNATED POINTS ONLY.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.



DESIGN DATA

ADT 2009 =	15,435
ADT 2030 =	24,000
DHV =	10 %
D =	55 %
T =	6 % *
V =	50 MPH
* TTST 2%	DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4703 =	1.379 mi.
LENGTH STRUCTURE OF TIP PROJECT U-4703 =	0.070 mi.
TOTAL LENGTH OF TIP PROJECT U-4703 =	1.449 mi.

Prepared In the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: AUGUST 20, 2008	JAMES A. SPEER, PE PROJECT ENGINEER
LETTING DATE: MAY 18, 2010	DANIEL W. GARDNER, JR., PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

Note: Not to Scale***S.U.E. = Subsurface Utility Engineering**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYSPROJECT REFERENCE NO.
U-4703SHEET NO.
1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ EGM
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-v-l-b-
Proposed Wetland Boundary	-v-l-b-
Existing Endangered Animal Boundary	-l-a-b-
Existing Endangered Plant Boundary	-e-p-b-

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	-j-s-
Buffer Zone 1	-b-z-1-
Buffer Zone 2	-b-z-2-
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	□

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-e-
Proposed Temporary Construction Easement	-e-
Proposed Temporary Drainage Easement	-t-d-e-
Proposed Permanent Drainage Easement	-p-d-e-
Proposed Permanent Utility Easement	-p-u-e-

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-c-
Proposed Slope Stakes Fill	-f-
Proposed Wheel Chair Ramp	WCR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	☆
Single Shrub	☆
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	□
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	○
Water Meter	□
Water Valve	⊗
Water Hydrant	⊗
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	A/G Water

TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊗
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊗
Sanitary Sewer Cleanout	⊗
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	A/G Sanitary Sewer
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

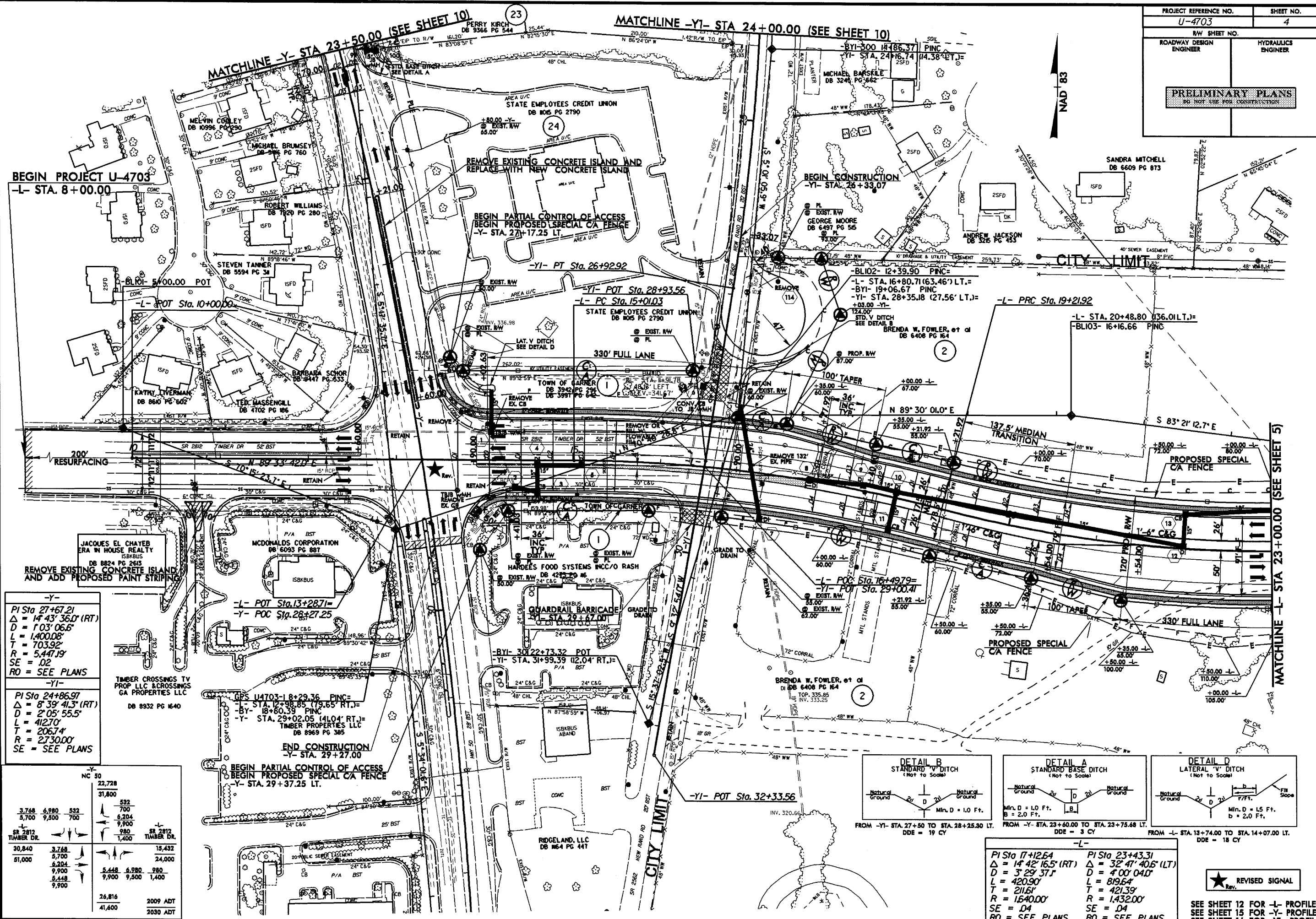
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊗
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

8/17/99

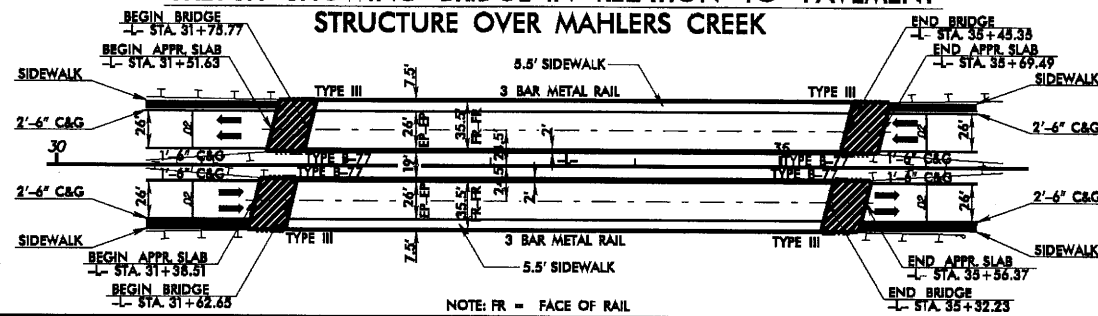
R/W REVISION (11/20/08) DWG - PARCEL 23 (PERRY KIRCH) AND PARCEL 24 (STATE EMPLOYEES CREDIT UNION) WERE ADDED FOR THE PERMANENT UTILITY EASEMENT.

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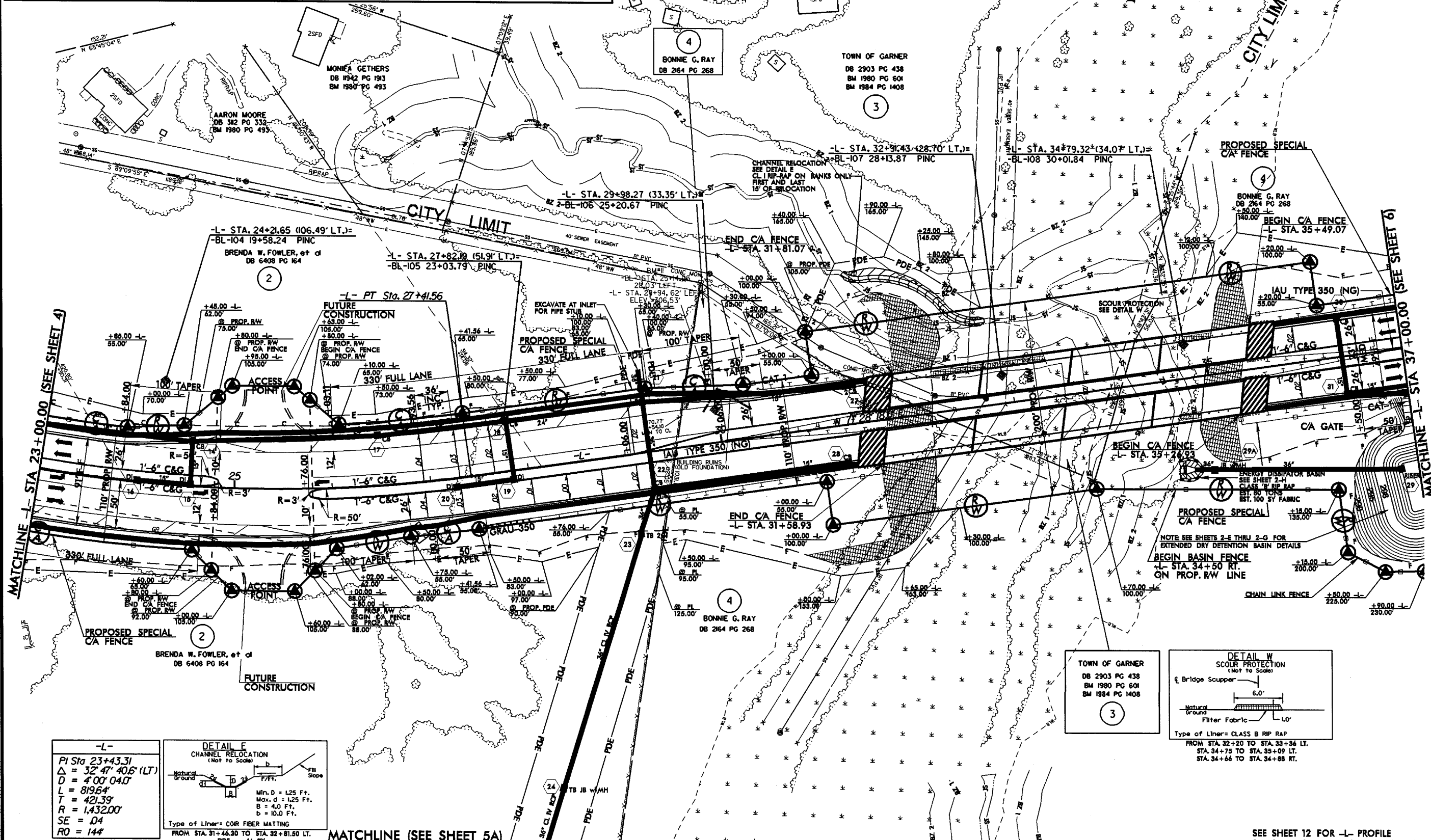
PROJECT REFERENCE NO.	SHEET NO.
U-4703	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	



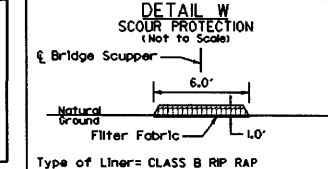
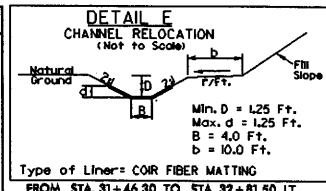
SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT STRUCTURE OVER MAHLERS CREEK



PROJECT REFERENCE NO.	SHEET NO.
U-4703	5
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-L-
PI Sta 23+43.31
Δ = 32° 47' 40.6" (LT)
D = 4' 00" 04.0"
L = 819.64'
T = 421.39'
R = 1,432.00'
SE = 04
RO = 144'



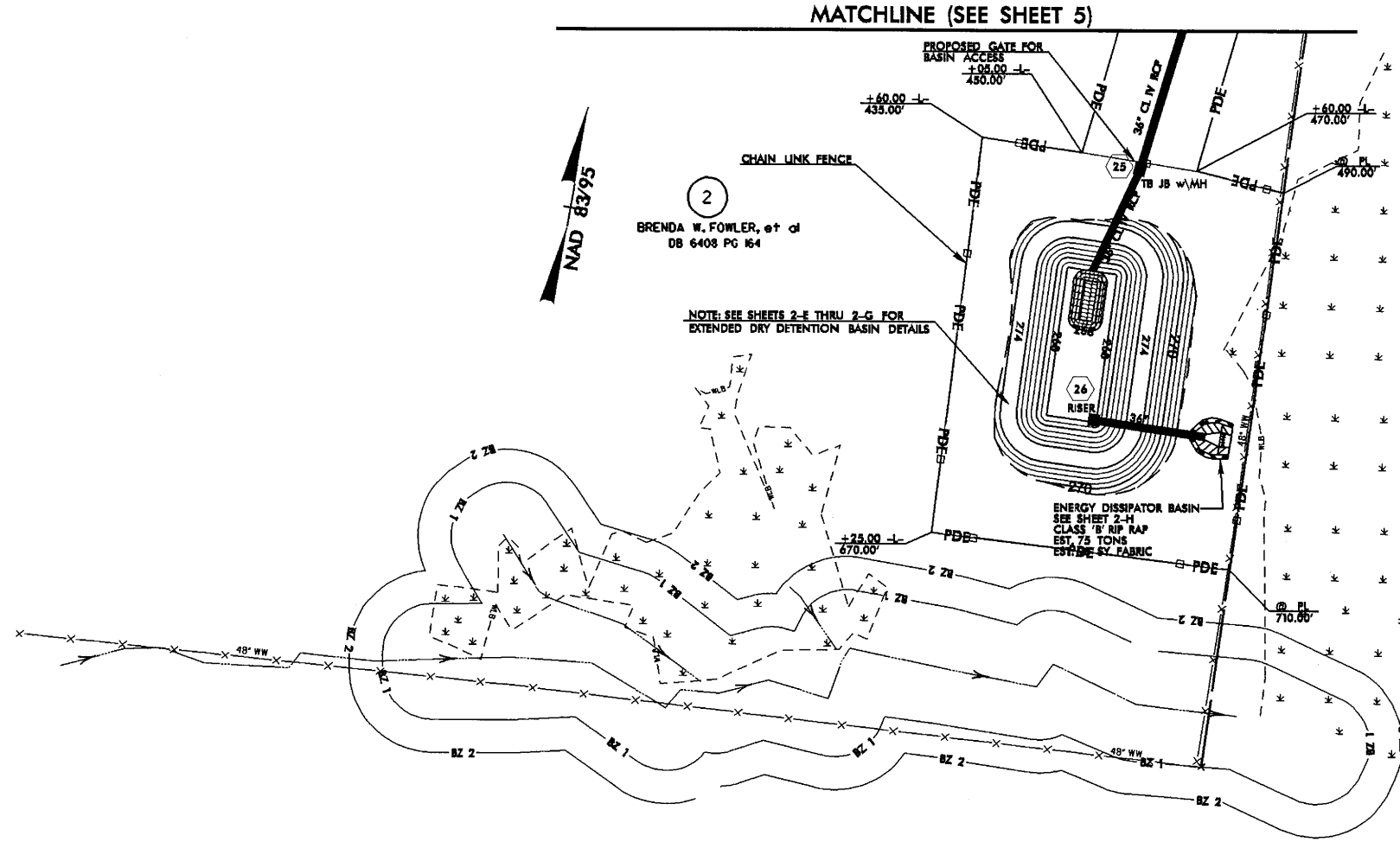
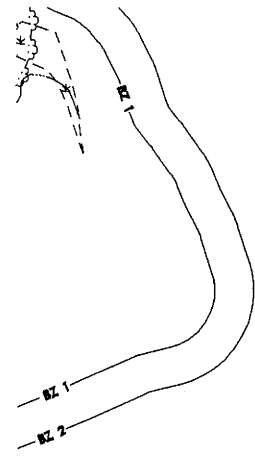
SEE SHEET 12 FOR -L- PROFILE
SEE SHEET S-1 THRU S- FOR STRUCTURE PLANS

8/17/99

REVISIONS

R/W REVISION 112/02/09 DWG - THE TCE WAS REVISED TO PDE FOR THE DRY DETENTION BASIN RIGHT OF -L- STA 29+425.00 ON PARCEL 2 (BRENDA W.FOWLER, ET AL).

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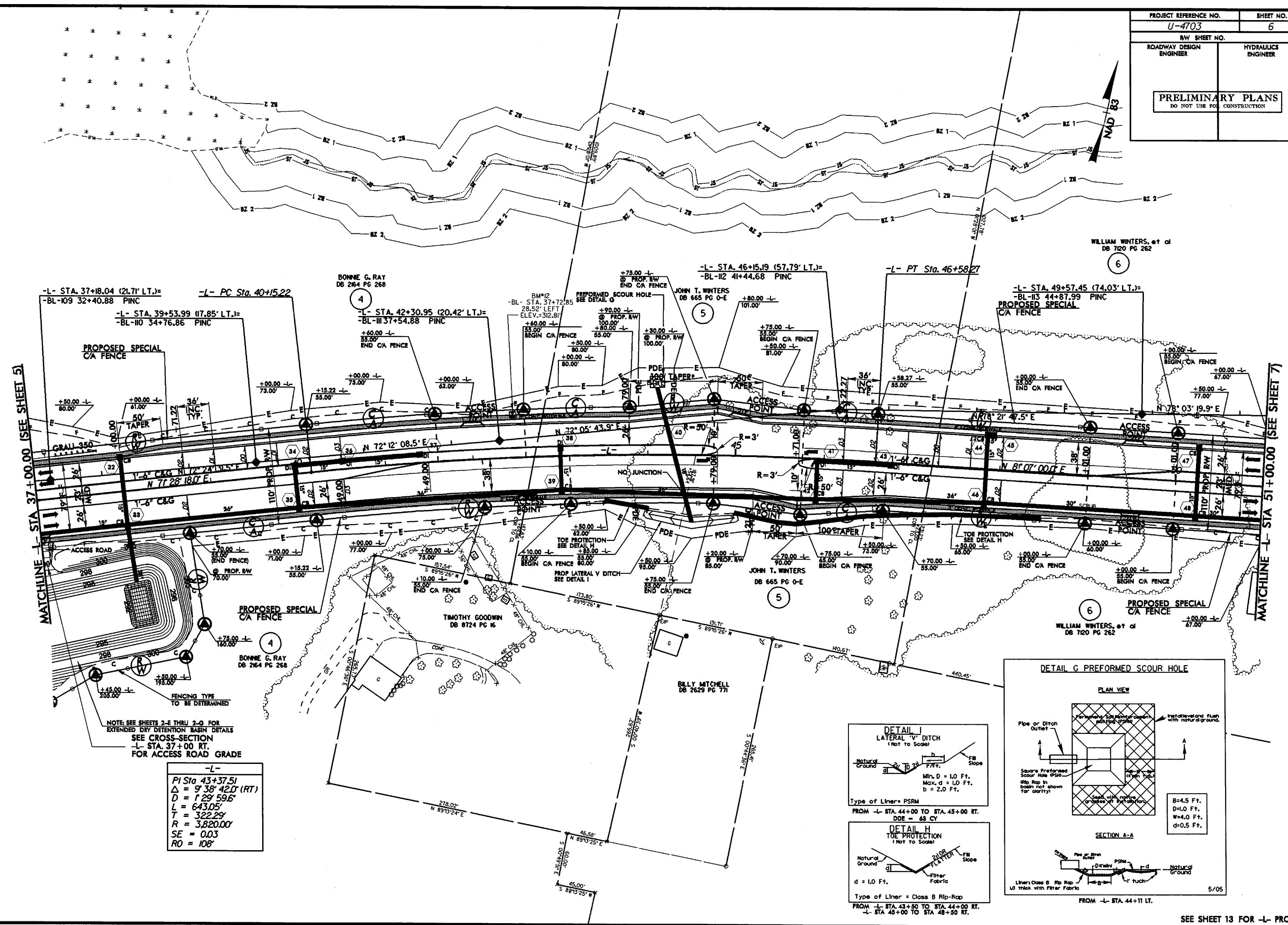
PROJECT REFERENCE NO.	SHEET NO.
U-4703	5A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

B-17/99

R/W REVISION (12/08/08) DWG - REVISED THE LOCATION OF THE 100 FOOT CONTROL OF ACCESS BREAK FROM -L- STA. 43+35 RT. TO -L- STA. 42+60 RT. ON PARCEL 4 (BONNIE G. RAY) AND PARCEL 5 (JOHN T. WINTERS).

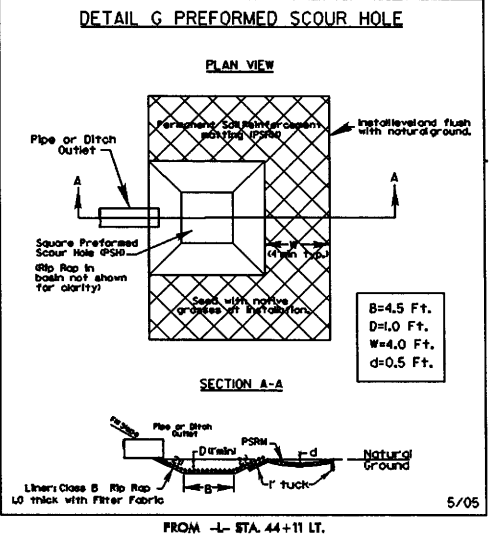
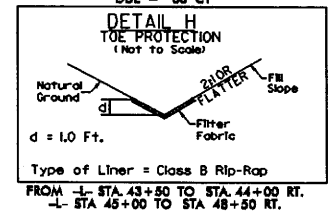
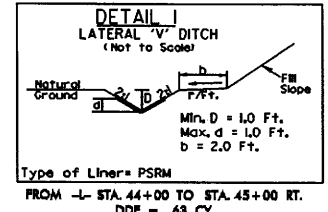
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PROJECT REFERENCE NO.	SHEET NO.
U-4703	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



NOTE: SEE SHEETS 2-E THRU 2-G FOR EXTENDED DRY DETENTION BASIN DETAILS SEE CROSS-SECTION -L- STA. 37+00 RT. FOR ACCESS ROAD GRADE

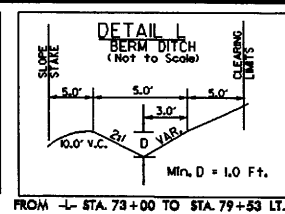
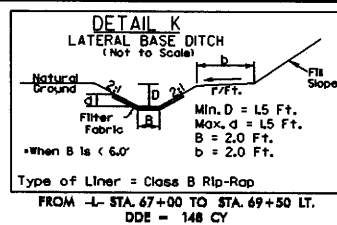
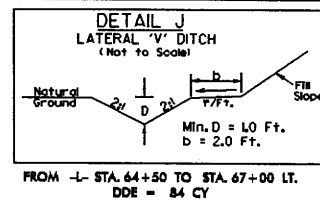
-L-
PI Sta 43+37.51
Δ = 9° 38' 42.0" (RT)
D = 1° 29' 59.6"
L = 643.05'
T = 322.29'
R = 3,820.00'
SE = 0.03
RO = 108'



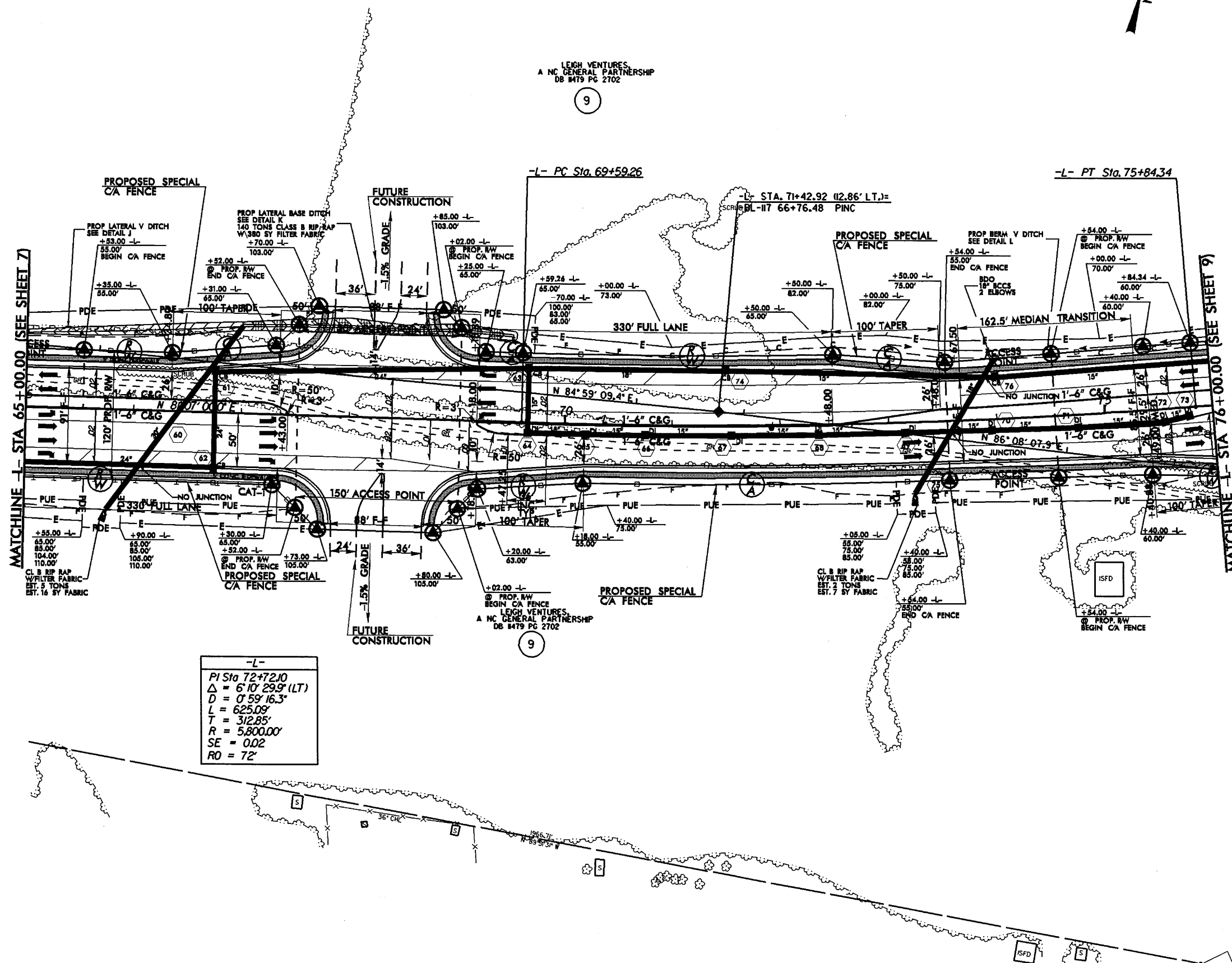
SEE SHEET 13 FOR -L- PROFILE

R/W REVISION (05/29/09) DWG - REVISED THE PROPERTY OWNER NAMES ON PARCEL 7 TO (DELORES W. PRYOR, AKA HILDRED W. PRYOR), PARCEL 8 TO (JESSIE MCCULLERS & WILLIAM THOMAS), AND PARCEL 9 TO (LEIGH VENTURES, A NC GENERAL PARTNERSHIP).

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\$\$\$SISERNAME\$\$\$



PROJECT REFERENCE NO.	SHEET NO.
U-4703	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



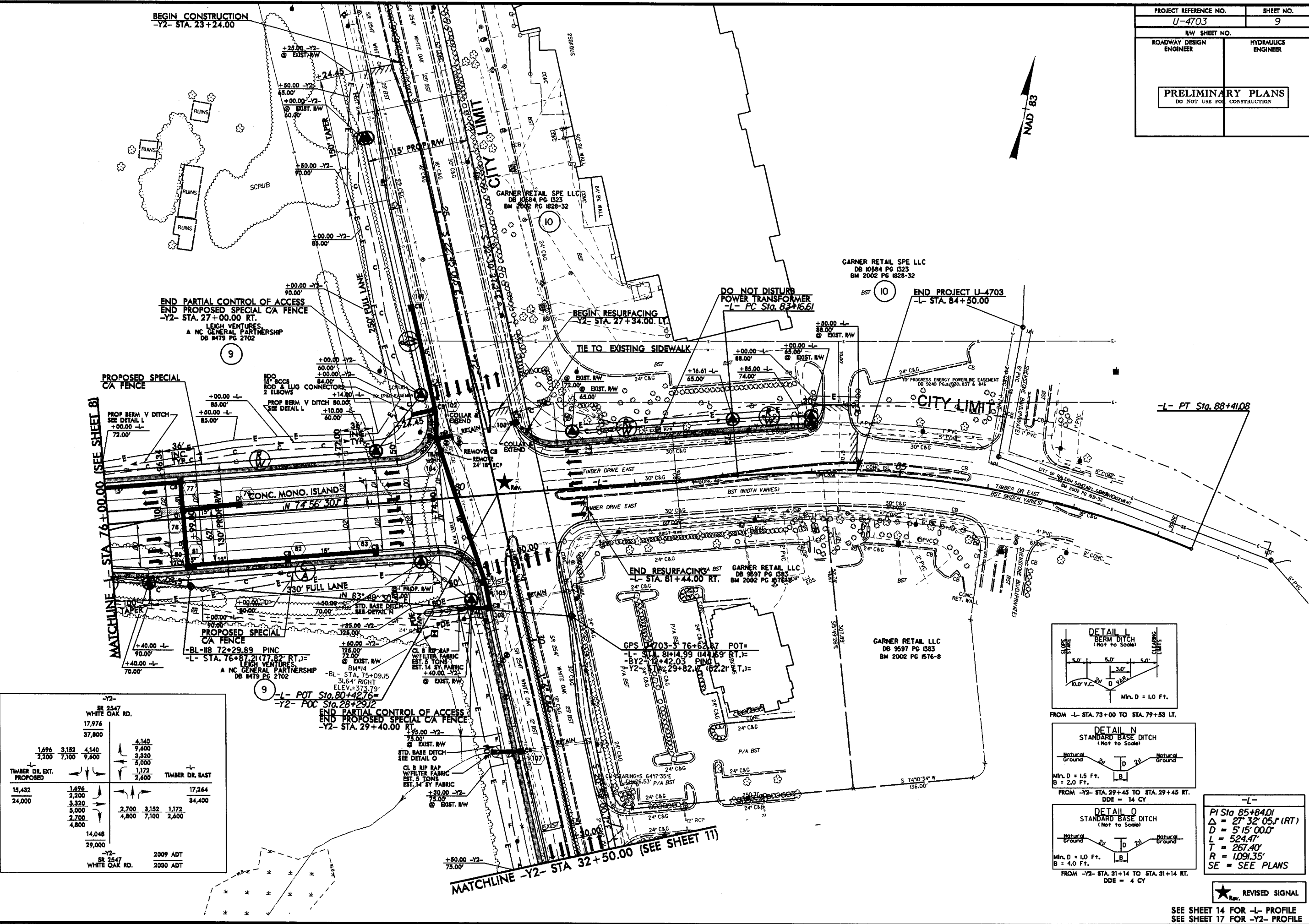
SEE SHEET 14 FOR -L- PROFILE

8/17/99

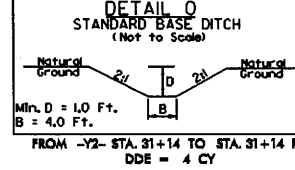
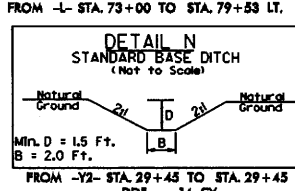
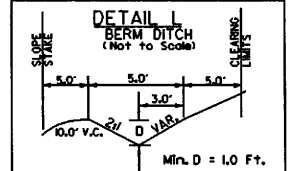
R/W REVISION (05/29/09) DWG - REVISED THE PROPERTY OWNER NAME ON PARCEL 9 TO (LEIGH VENTURES, A NC GENERAL PARTNERSHIP).

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PROJECT REFERENCE NO.	SHEET NO.
U-4703	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	



-Y2- BR 2547 WHITE OAK RD. 17,974 37,800		4,140 9,600 3,320 5,000 1,172 2,600	
1,696 2,200	3,152 7,100	4,140 9,600	3,320 5,000
TIMBER DR. EXT. PROPOSED 15,432 24,000		17,264 34,400	
1,696 2,200	3,152 7,100	4,140 9,600	3,320 5,000
14,048 29,000	2,700 4,800	3,152 7,100	1,172 2,600
-Y2- SR 2547 WHITE OAK RD. 2009 ADT 2030 ADT			



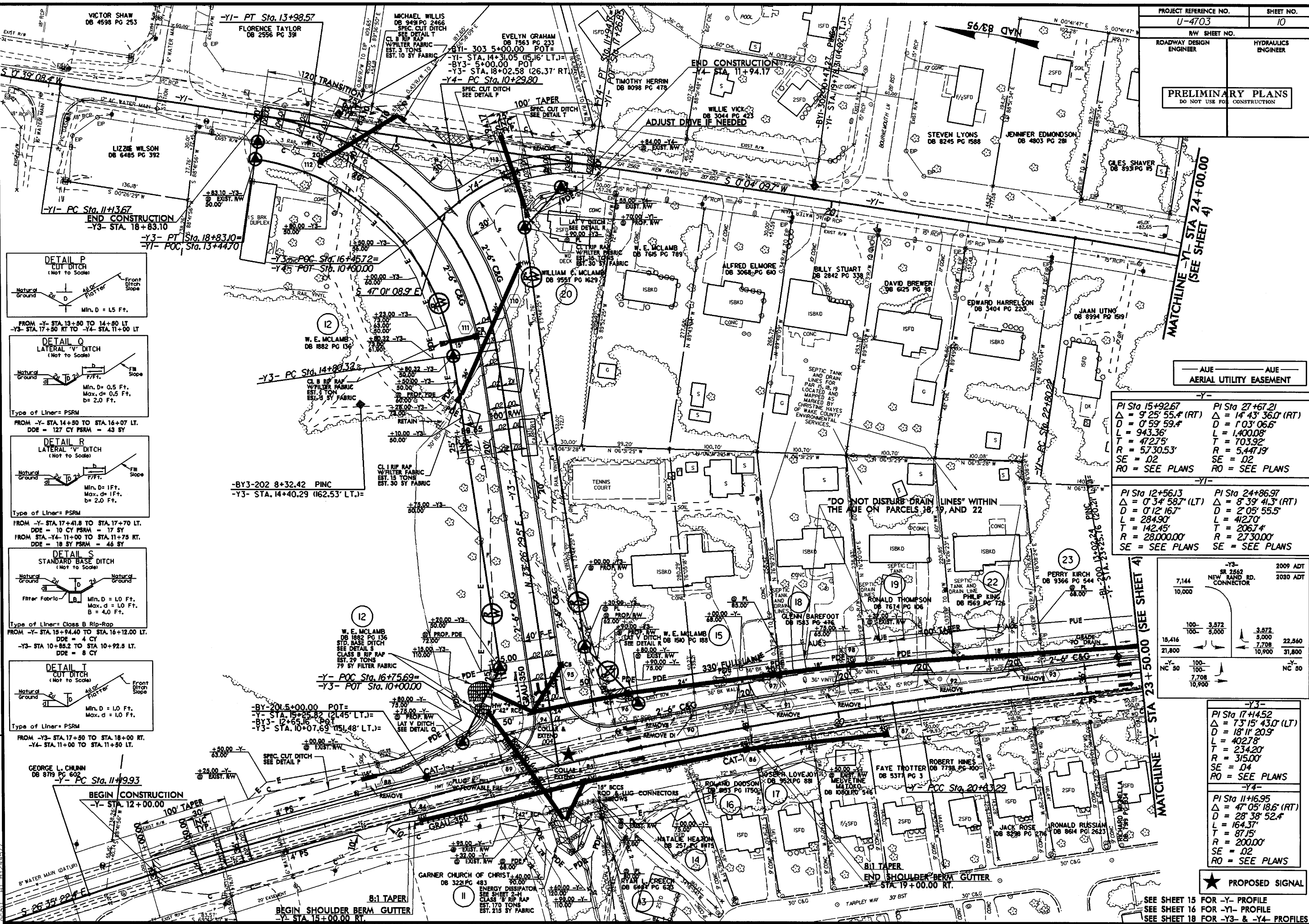
-L-
PI Sta 85+84.01
Δ = 27° 32' 05.1" (RT)
D = 5' 15' 00.0"
L = 524.4'
T = 267.40'
R = 1,091.35'
SE = SEE PLANS

★ REVISED SIGNAL

SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 17 FOR -Y2- PROFILE

REVISIONS

R/W REVISION (10/01/09) DWG - REVISED THE NOTE "DO NOT DISTURB SEPTIC DRAIN LINES TO "DO NOT DISTURB DRAIN LINES WITHIN THE AUE ON PARCEL 18 (GLENN BAREFOOT), PARCEL 19 (RONALD THOMPSON), AND PARCEL 22 (PHILIP KING).

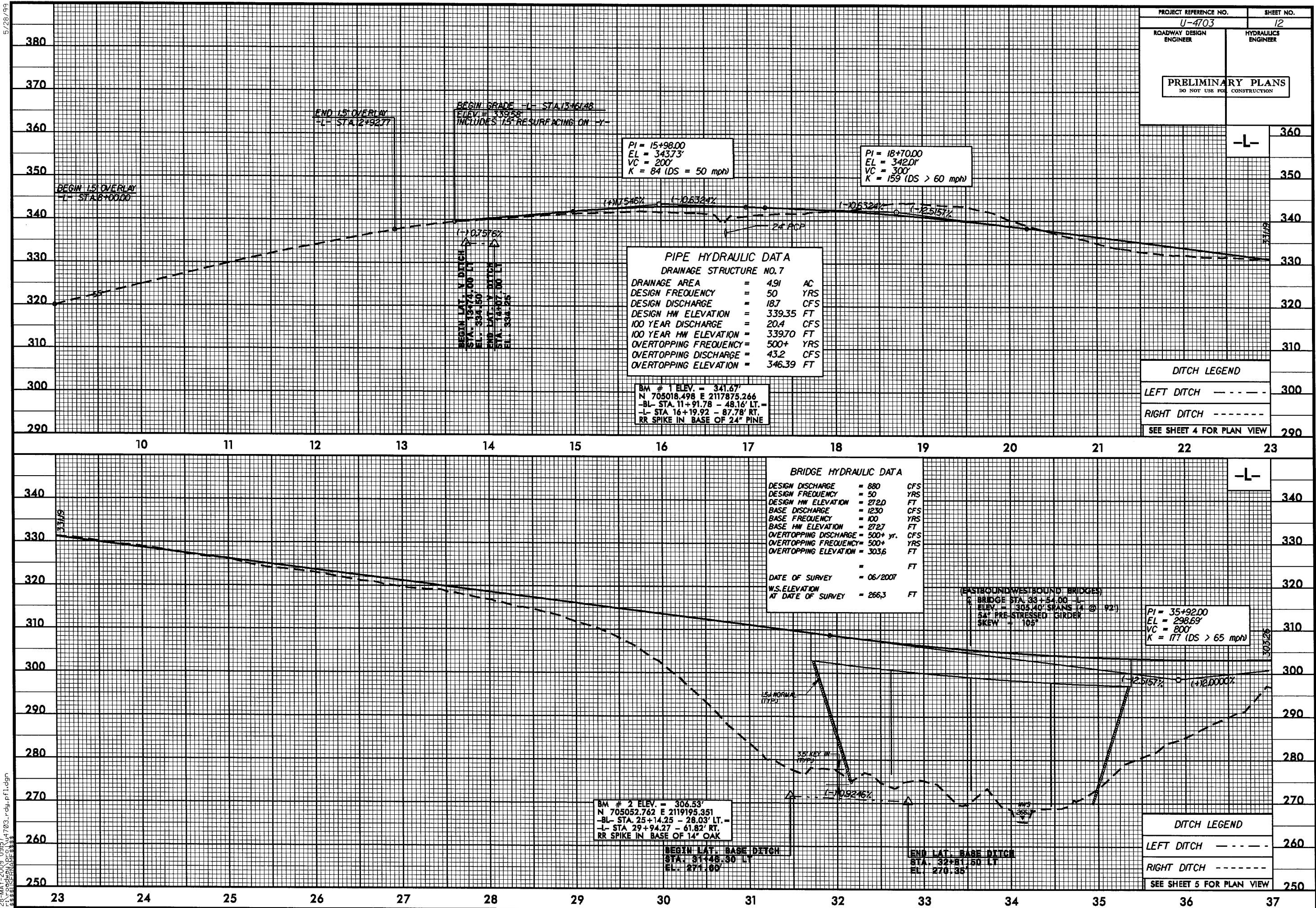


SEE SHEET 15 FOR -Y- PROFILE
SEE SHEET 16 FOR -Y1- PROFILE
SEE SHEET 18 FOR -Y3- & -Y4- PROFILES



5/28/99

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PROJECT REFERENCE NO.
U-4703

SHEET NO.
12

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PI = 15+98.00
EL = 343.73'
VC = 200'
K = 84 (DS = 50 mph)

PI = 18+70.00
EL = 342.01'
VC = 300'
K = 159 (DS > 60 mph)

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 7

DRAINAGE AREA	=	4.91	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	18.7	CFS
DESIGN HW ELEVATION	=	339.35	FT
100 YEAR DISCHARGE	=	20.4	CFS
100 YEAR HW ELEVATION	=	339.70	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	43.2	CFS
OVERTOPPING ELEVATION	=	346.39	FT

BM # 1 ELEV = 341.67'
N 705018.498 E 2117875.266
-BL- STA. 11+91.78 - 48.16' LT. -
-L- STA 16+19.92 - 87.78' RT. -
RR SPIKE IN BASE OF 24" PINE

DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

SEE SHEET 4 FOR PLAN VIEW

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	880	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	272.0	FT
BASE DISCHARGE	=	1230	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	272.7	FT
OVERTOPPING DISCHARGE	=	500+ yr.	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	303.6	FT

DATE OF SURVEY = 06/2007
W.S. ELEVATION AT DATE OF SURVEY = 266.3 FT

(EASTBOUND/WESTBOUND BRIDGES)
BRIDGE STA. 33+54.00 - L
ELEV = 305.40' SPANS (A @ 92')
54' PRE-STRESSED GIRDER
SKEW = 10°

PI = 35+92.00
EL = 298.69'
VC = 800'
K = 177 (DS > 65 mph)

BM # 2 ELEV = 306.53'
N 705052.762 E 2119195.351
-BL- STA. 25+14.25 - 28.03' LT. -
-L- STA 29+94.27 - 61.82' RT. -
RR SPIKE IN BASE OF 14" OAK

BEGIN LAT. BASE DITCH
STA. 31+48.30 LT.
EL. 271.89'

END LAT. BASE DITCH
STA. 32+81.50 LT.
EL. 270.38'

DITCH LEGEND

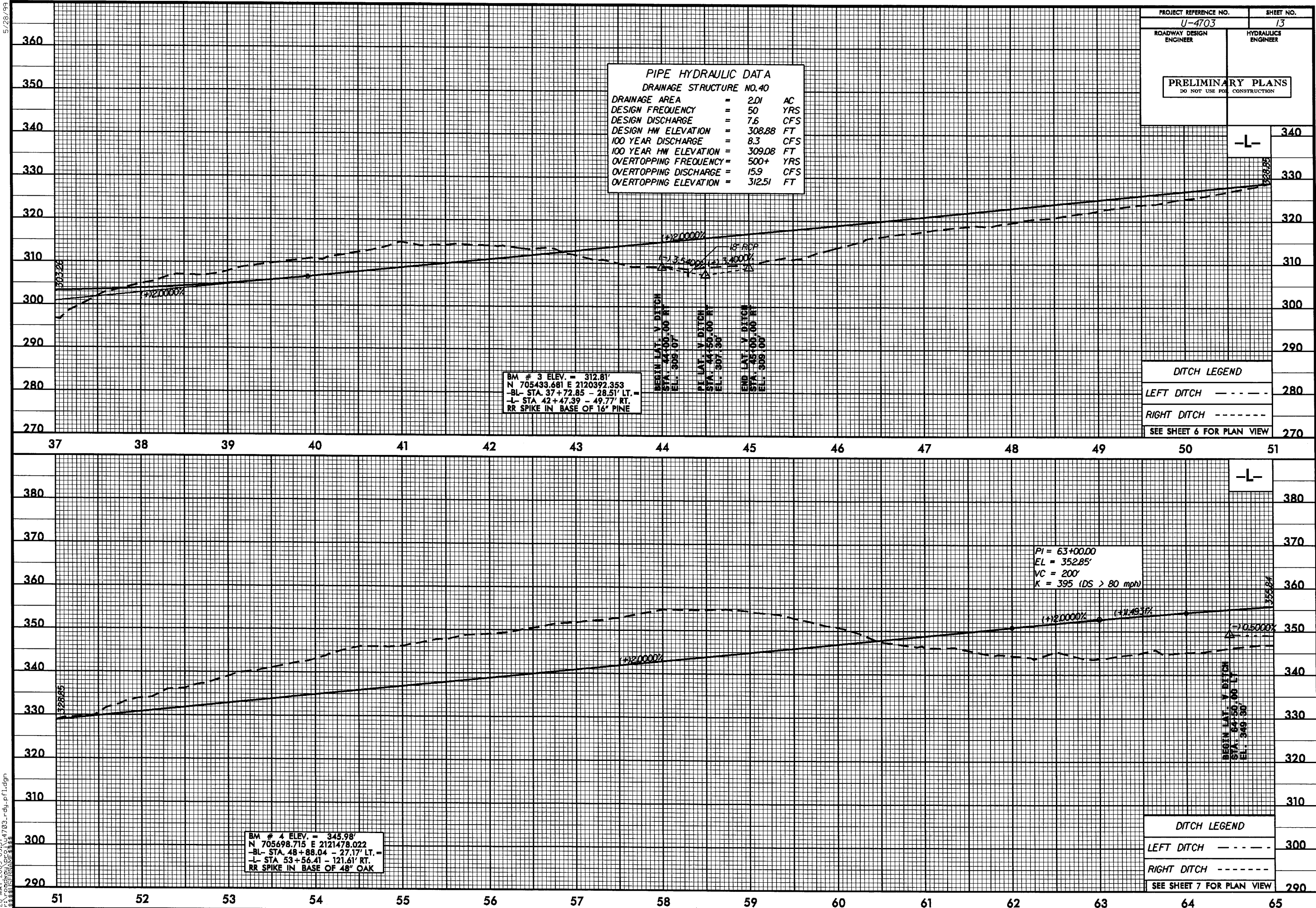
LEFT DITCH - - - - -

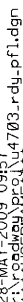
RIGHT DITCH - - - - -

SEE SHEET 5 FOR PLAN VIEW

5/28/99

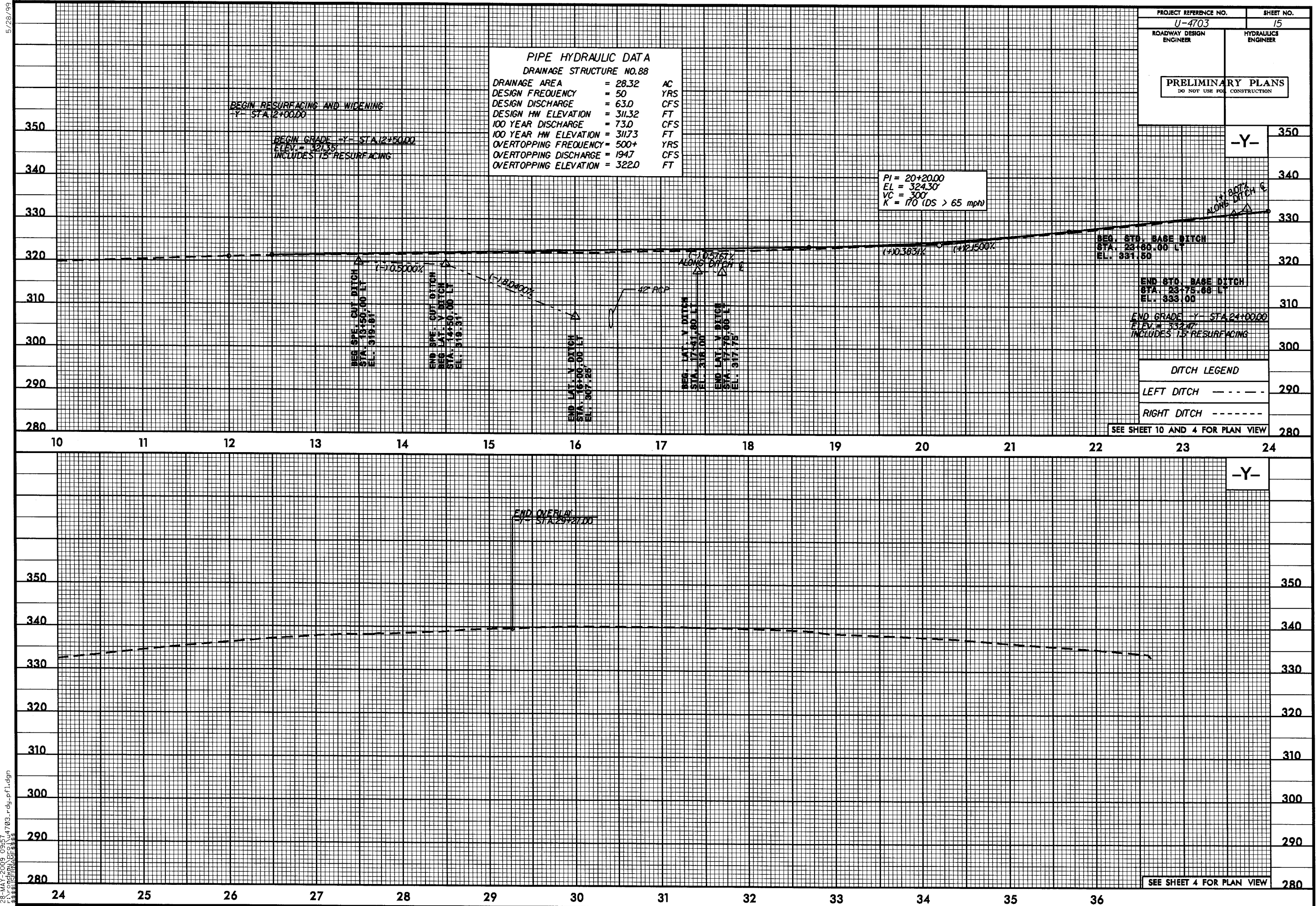
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U4703-15



PROJECT REFERENCE NO. U-4703	SHEET NO. 15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y-

-Y-

SEE SHEET 4 FOR PLAN VIEW

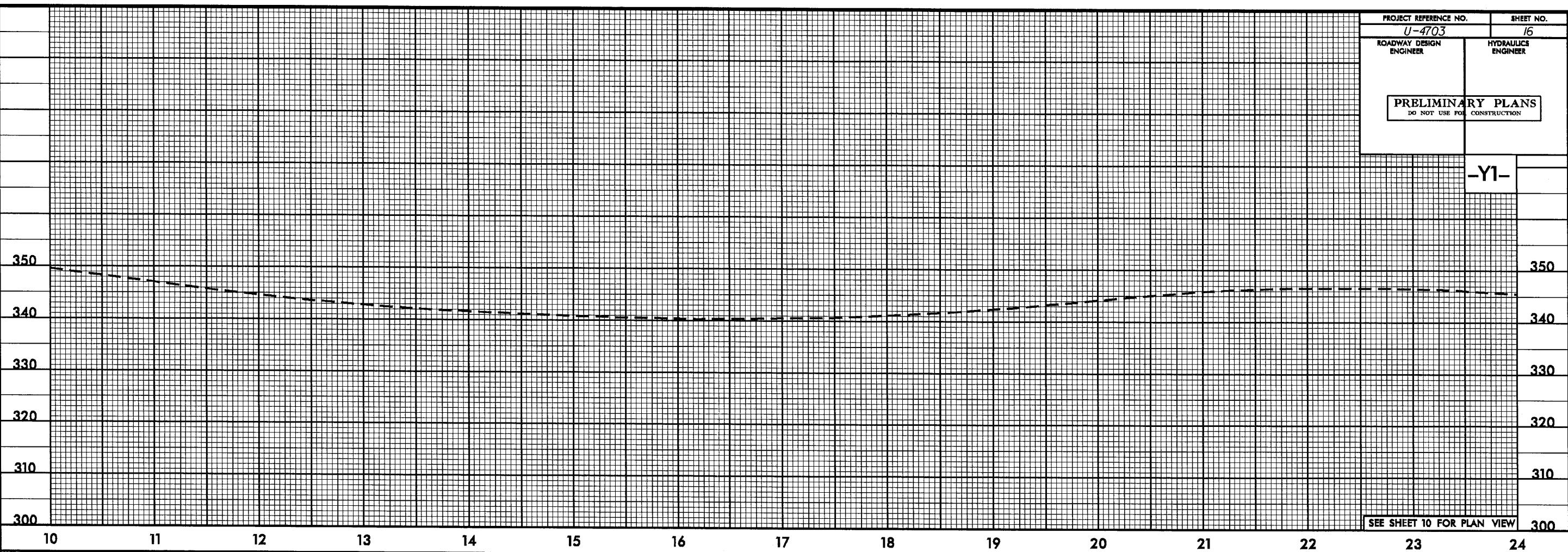
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PROJECT REFERENCE NO. U-4703	SHEET NO. 16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

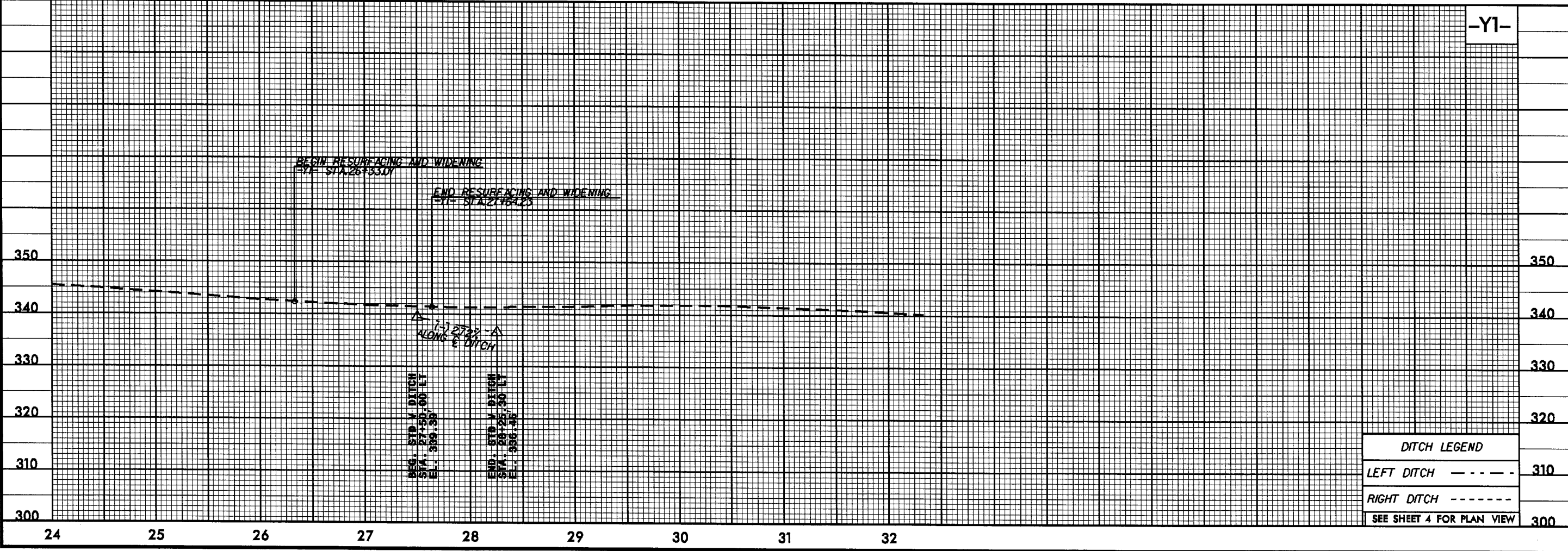
-Y1-

SEE SHEET 10 FOR PLAN VIEW



-Y1-

DITCH LEGEND	
LEFT DITCH	----
RIGHT DITCH	-----
SEE SHEET 4 FOR PLAN VIEW	



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